Apple Readies for Mac Clones, Page 34

NOVEMBER 1994

Macworld

THE MACINTOSH® AUTHORITY

$3.95 Canada $4.95

Desktop Conferencing

Can Video Meetings Save You Time, Money, and Travel?

PLUS

Two-Page Color Displays

22 TESTED: HIGHER QUALITY, LOWER PRICES

Multimedia Whiz

INEXPENSIVE QUADRA 630: HOT PERFORMER BUILT FOR EASY EXPANSION, PAGE 52

EVERYONE CAN USE A
THAT'S WHY WE BUILT ONE IN

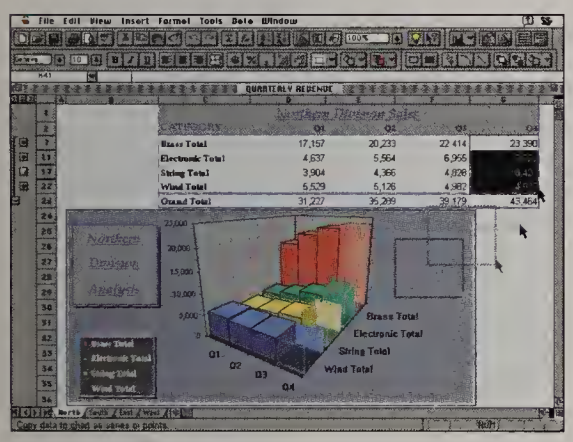
N EXPERIENCED GUIDE.
TO NEW MICROSOFT EXCEL 5.0.

New Microsoft Excel 5.0

You're never alone with the most popular spreadsheet for the Macintosh®: new Microsoft® Excel 5.0 for the Macintosh and Power Macintosh™. Because inside every single box, you'll find an experienced guide.

We call it IntelliSense™ technology. Simply put, IntelliSense senses what you want to accomplish, then helps you get it done.

All of a sudden, your everyday



Updating charts couldn't be easier. Just drag new data onto your chart. Microsoft Excel does the rest.

spreadsheet tasks become automatic. And complex tasks are a whole lot easier. For instance?

Say you're looking for a short-cut through a forest of data. The PivotTable™ Wizard comes to your rescue. It helps you asssemble a clear summary table. From there, use PivotTable dynamic views to see data from any point of view you want. Whether by category, quarter or region. You decide.

Get tips on working faster and easier from your guide: The TipWizard assistant.

You'll stay on the right path thanks to the TipWizard™ assistant. This handy IntelliSense feature observes how you work, then offers tips on quicker and easier ways to do things in the future.

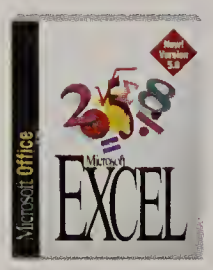
Then consider the direct route to chart changes. Called Hands-on-Charting, it lets you instantly resize or reformat any part of your chart.

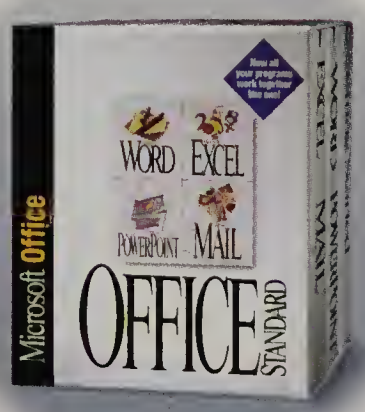
Noticing a trend? IntelliSense technology makes it easier for you to work on your spreadsheet. Period. Letting you focus on your analysis, not your data.

And while working inside Microsoft Excel is easy, working with other Microsoft Office programs is also a cinch. You'll drag and drop Microsoft Excel charts right into Word. You can even make changes to charts without leaving your Word document. OfficeLinks makes it all happen.

For friendly directions to a retailer located near you, just call (800) 871-3268, Department Y3N. Then upgrade to new Microsoft Excel 5.0. It's not only the leader among Macintosh spreadsheets, it even knows how to lead you.

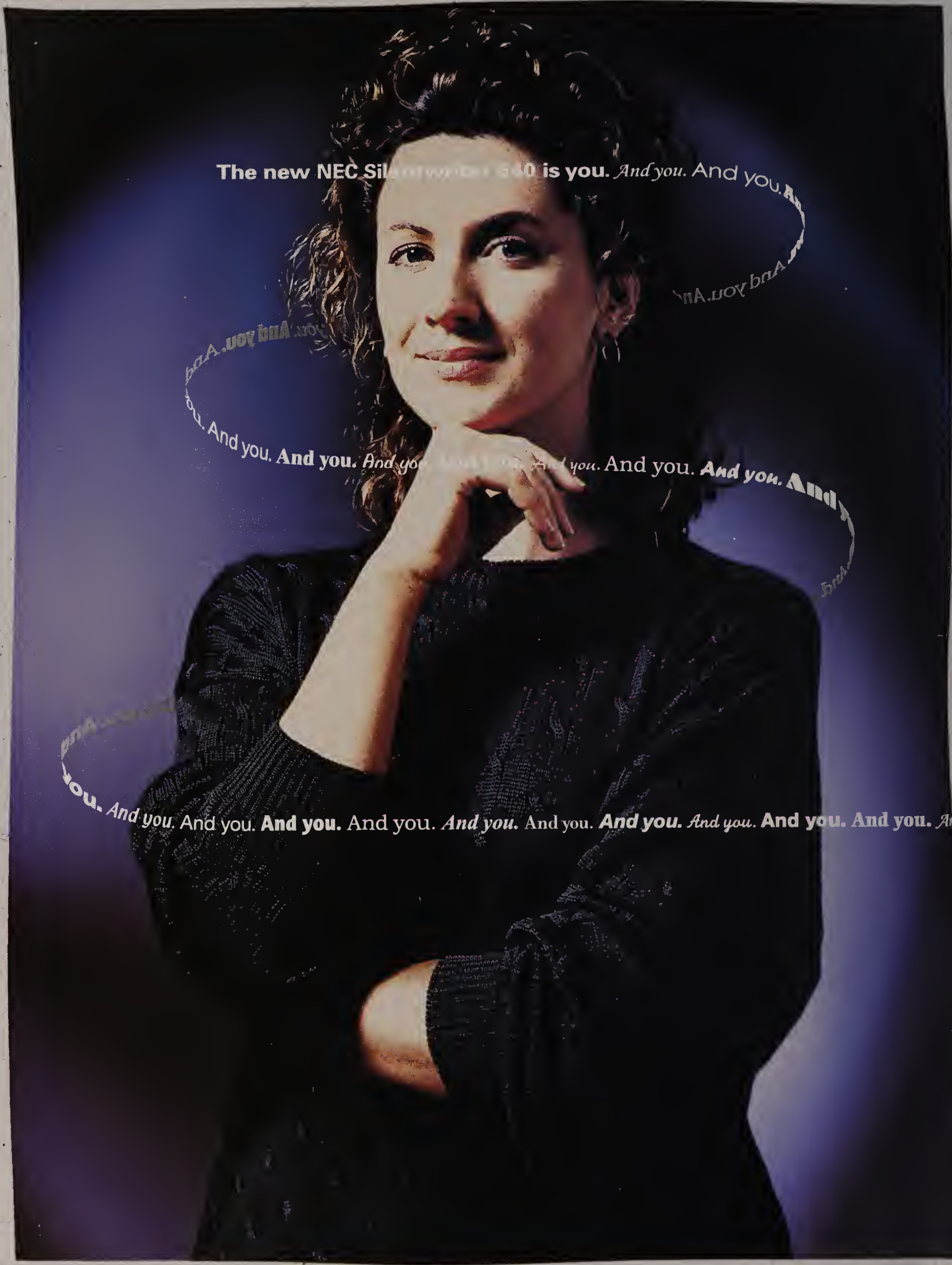
Microsoft Excel 5.0 is the latest version of the most popular spreadsheet for the Macintosh. And it's part of the Microsoft Office family.





Microsoft Office

© 1994 Microsoft Corp. All rights reserved. Microsoft Office Standard edition includes: Microsoft Excel, Word, PowerPoint® and a Mail workstation license (server and software acquired separately). For info only: In the 50 United States, call (800) 871-3268, Dept. Y3N. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers can reach Microsoft text telephone (TT/TDD) services by calling (800) 892-5234 in the United States or (905) 568-9641 in Canada. Microsoft and PowerPoint are registered trademarks, and IntelliSense, PivotTable and TipWizard are trademarks of Microsoft Corp. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc.



Sentinel is a registered trademark of NEC Corporation. All other trademarks and registered trademarks are the property of their respective holders. The Energy Star emblem does not represent EPA endorsement of any product or service. Specifications subject to change without notice. NEC GSA#GS00F9JAGS6241 © 1993 NEC Technologies, Inc.

Our new personal Mac™ laser printer lets you say what you want to say, exactly the way you want to say it. That's because it's a true laser printer with 300 dpi resolution, along with our patented Sharp Edge Technology and Microfine toner, for crisper characters and richer, darker blacks.

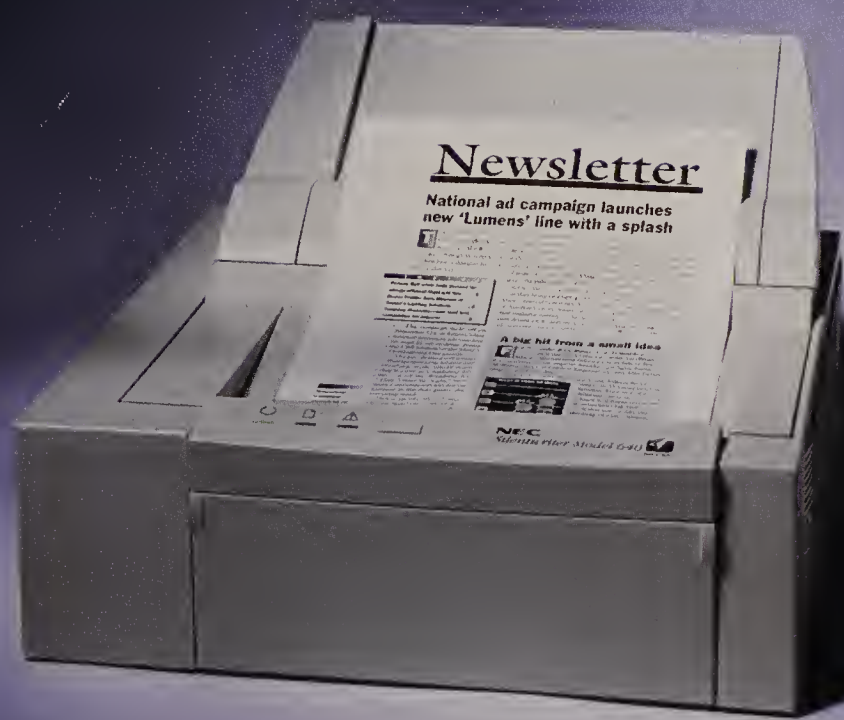
And because it comes with 17 resident Adobe™ Type 1 fonts, 35 professional TrueType™ fonts, and built-in TrueType and Type 1 rasterizers.

It's loaded in other ways, as well. It has Adobe PostScript™ Level 2, so it works beautifully with any application. NEC's 6ppm print engine. 3 MB of standard RAM. And an AppleTalk® interface, for quick and easy connectivity with one or several Macs.

It also gives you what no one else does: a 2-year limited warranty that will get you a replacement printer *overnight,* if anything goes wrong. All for about $800.

For more information, call 1-800-NEC-INFO. Or, for information via fax, 1-800-366-0476, and request document #79640. Thank you. And you. And you.

d you. And you. **And you.** ***And you.*** And you. ***And you.*** And you. **And you.** *And you.* **And you.** ***And you.*** *And you.*



POSTSCRIPT Software from Adobe

energy EPA POLLUTION PREVENTER

NEC

Circle 15 on reader service card

Contents

MACWORLD THE MACINTOSH® AUTHORITY NOVEMBER 1994

Features

86 Desktop Videoconferencing
BY MATTHEW LEEDS Is the promise worth the price? Macworld Lab tests four desktop videoconferencing systems for sound and image quality.

96 OpenDoc and OLE 2.0
BY GALEN GRUMAN Apple and Microsoft plan to revolutionize the way we use applications—but will their competing visions for the future be a change for the better?

104 Big Screen Close-up
BY CHARLES SEITER AND TIM WARNER Macworld Lab puts 22 two-page color displays through a battery of real-world and objective tests to find the winners in price, features, and quality.

Apple's newest, the Quadra 630, reviewed on page 52.

Macworld Lab tests two-page color monitors, page 104.

News

33 MacBulletin

34 News Future Mac clones • HP intro's Color LaserJet • Quadruple-speed CD-ROM drives, and more

41 Power Mac News Power Mac bugs and turkeys • Shareware rolls around, and more

43 New Products

Opinion

19 State of the Mac
BY ADRIAN MELLO The upcoming melee between OpenDoc and OLE.

25 Letters

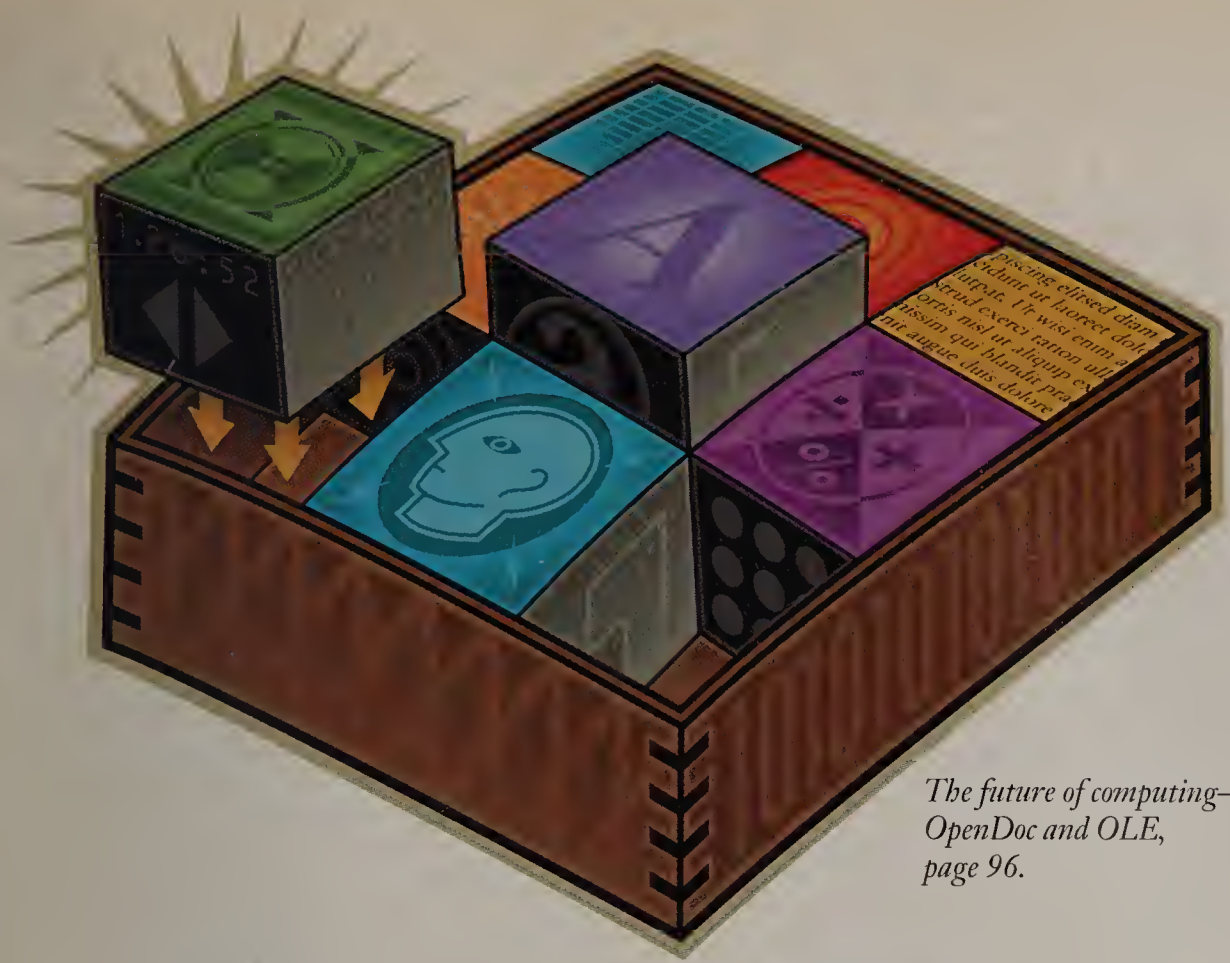
157 The Desktop Critic
BY DAVID POGUE A new crop of Newton software.

163 The Iconoclast
BY STEVEN LEVY Oh, brave new eWorld!

169 Conspicuous Consumer
BY DEBORAH BRANSCUM Apple's mail-order moves.

258 Wise Guy
BY GUY KAWASAKI Stop the presses! Jobs is back.

ON THE COVER
Photograph by Stan Musilek.



The future of computing—OpenDoc and OLE, page 96.

Graphics

114 News 36-bit scanning for a 24-bit price • Three image-editing XTensions • Desktop service bureau, and more

118 Expert Graphics
BY CATHY ABES Graphics professionals share their secrets.

122 Special Effects in Photoshop
BY DEKE McCLELLAND We evaluate nine Photoshop plug-in filter collections—practical and versatile tools for the graphics professional.

At Work

132 News Three-D spreadsheet • Quicken 5.0's improved look • Bargain-basement electronic archiving, and more

135 Working Smart
BY JIM HEID The sticky business of label-making.

139 Quick Tips
BY LON POOLE Tips, tricks, and shortcuts.

Networks

144 News Apple offers TCP/IP access for ARA • Lotus to add Mail to Notes • Network analysis on the PowerBook 500 series, and more

148 Piracy Prevention
BY KRISTI COALE Illegal software can cost your business a fortune. Use these network-management tools to keep your company on the up-and-up.

153 PowerBook Notes
BY CARY LU A handful of Ethernet solutions.

Buyers' Tools

173 Editors' Choice
Top picks from our comparative articles.

177 Star Ratings
Hardware and software reviews at a glance.

193 Streetwise Shopper
Hardware and software bargains: discounts, bundles, upgrades.

14 How to Contact Macworld

IDG

November 1994, Volume 11, Number 11 Macworld (ISSN 0741-8647) is published monthly by Macworld Communications, Inc. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to 303/447-9330. Subscription rates are $30 for 12 issues, $60 for 24 issues, and $90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for postage for Canada and Mexico subscribers. Add $69 per year for postage to all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices. **Postmaster:** Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529. Printed in the U.S.A.

Reviews

52 **Quadra 630**
Macintosh computer

54 **MiniCad 5**
CAD software

55 **Dabbler 1.0**
Art-education/paint software

57 **Apple Personal Diagnostics**
Hardware-diagnostics utility

59 **ScanPrepPro 1.2**
Photoshop add-on

59 **LogoMotion 1.0**
Animation tool

61 **TeamFlow 3.1**
TQM flowchart software

63 **First Things First Proactive 1.1**
Scheduling program

63 **Kekulé 1.1**
Science software

65 **Drive7 3.0**
Hard drive–formatting utility

67 **OmniPage Professional 5.0**
OCR software

67 **PowerAgent 1.1**
Task-automation software

69 **White Knight 12.0**
Telecommunications software

70 **ClickBook 1.1**
Print utility

70 **PowerPort Mercury/PB 500 series**
Fax modem

75 **Terrazzo 1.0**
Plug-in graphic-effects module

75 **CheckPost 1.3; LaserCheck 1.0**
Imagesetter-simulation software

77 **The Multimedia Workshop 1.0**
Multimedia presentation tool

77 **Decision Analysis 2.5**
Decision-assistance software

79 **DaynaPort Pocket SCSI/Link; Pocket EtherTalk Adapter**
Network hardware

79 **MicMac 2.0v1**
Recording software

81 **MATLAB 4.1**
Numerical math software

81 **PhotoMatic 1.01**
Photoshop utility

82 **Mac Keyboard Deluxe**
Keyboard

82 **Maxima 3.0**
RAM disk

The detail of EPSON's 4800 dpi, scanner really stands

Actual 30-bit scan

© 1994 EPSON AMERICA, INC., 20770 Madrona Ave., Torrance, CA 90503. For dealer referral or warranty details, call 800-BUY-EPSON. In Canada, call 800-GO-EPSON. For Latin America, 305-265-0092. EPSON, Adobe Photoshop, Kai's Power Tools, ScanTastic, and Macintosh are trademarks or registered trademarks of SEIKO EPSON CORP., Adobe Systems Inc., HSC Software, Second Glance, and Apple Computer, Inc., respectively.

30-bit color
out.

When it comes to detail, the new EPSON ES-1200C is in a class by itself. It's the only personal scanner with 4800 dpi and 30-bit color internal scanning for crisp, clear image reproduction.

To ensure the best results with any image you scan, the ES-1200C provides one and three pass scanning, and standard parallel and SCSI ports allow you to connect simultaneously to a Mac and a PC—an EPSON exclusive. All this means the ES-1200C gives you more power than anything else in its price range.

**The ES-1200C Pro for Mac.
The highest detail
of any personal scanner.**

The ES-1200C Pro includes top-ranked Adobe Photoshop, Kai's Power Tools, ScanTastic plug-in module & desk accessory and a SCSI cable. There's also a PC version.

Feature	EPSON ES-1200C Pro	HP ScanJet IICX	Microtek II HR	Umax UC1260
Optical Resolution	600	400	600	600
Max Resolution	4800	1600	2400	2400
Bits Per Pixel	10	8	8	8
One & Three Pass	yes	no	no	no
Dual Connectivity	yes	no	no	no

To see what a difference the details can make, visit your local authorized dealer or call 1-800-BUY-EPSON.

EPSON

Now you can print from your Macintosh to over 1,000 PC-compatible printers.

On the road with your PowerBook? At home using an old PC printer? Sharing PC printers on a network? PowerPrint's cable-and-software package gives you instant access to just about any laser, dot matrix, color, or fast wide-carriage printer.

PowerPrint costs less than $150.

And includes features like built-in spooling, scaling, and custom paper sizes. It's compatible with TrueType and Adobe TypeManager fonts.

Also available in network versions.

PowerPrint/LT™ for LocalTalk™ networks. PowerPrint/NW™ for Novell NetWare printing services.

Call 800-330-8233 for more information, or contact your local dealer.

Upgrade to 2.5 and Get the Power of Color!

Why you should upgrade from Grappler or MacPrint, for $75.	PowerPrint 2.5 is much faster, provides access to color printers like the Canon BJC-600 and the HP DeskJet 550C Plus, features like better quality, background printing and greater compatibility
Current owners of PowerPrint can upgrade for $35.	And get 32-bit color and grayscale printing, print preview and support for new printers

MacUser 100 · MW Editors' Choice · yes it runs with NetWare · 4 Apples Mac Home Journal

GDT SOFTWORKS INCORPORATED

GDT Softworks, Inc.
4664 Lougheed Highway
Suite #188
Burnaby, BC
Canada V5C 6B7

800-330-8233
604-291-9121
604 291 9689 (fax)
AppleLink:GDT.MKT

PowerPrint™

THE MACINTOSH PRINTING SOLUTION™

PowerPrint and the GDT Softworks logo are trademarks of GDT Softworks Inc. Other product and corporate names may be trademarks or registered trademarks of other companies and are used only for explanation and to the owners benefit without intent to infringe.

End users circle 32 on reader service card

Dealers circle 42 on reader service card

Macworld

PRESIDENT/CEO AND PUBLISHER MACWORLD COMMUNICATIONS, INC.	James E. Martin
CHIEF OPERATING OFFICER MACWORLD MAGAZINE	Colin Crawford
ASSISTANT TO THE PRESIDENT AND COO	Yuen Yeh
DIRECTOR OF FINANCE	Vicki Peilen
DIRECTOR OF HUMAN RESOURCES	Shelly Ginenthal
DIRECTOR OF CORPORATE INFORMATION SYSTEMS	Walter J. Clegg
INFORMATION SYSTEMS MANAGER	Rick Valdez
CORPORATE BUSINESS MANAGER	Christina W. Spence
ACCOUNTING/OPERATIONS MANAGER	Pat Murphy
ACCOUNTING/FACILITIES MANAGER	Michelle Reyes
SENIOR FINANCIAL ANALYST	Madeleine Buckingham

MACWORLD is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 194 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: **ARGENTINA'S** Computerworld Argentina, Infoworld Argentina; **ASIA'S** Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia; **AUSTRALIA'S** Computerworld Australia, Australian PC World, Australian Macworld, IDG Sources, Reseller, Network World, Mobile Business Australia; **AUSTRIA'S** Computerwelt Oesterreich, PC Test; **BELGIUM'S** Data News (CW); **BRAZIL'S** Computerworld, Game Power, Super Game, Gamepro, Mundo IBM, Mundo Unix, PC World; **BULGARIA'S** Computerworld Bulgaria, Ediworld, PC & Mac World Bulgaria, Network World Bulgaria; **CANADA'S** Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; **CHILE'S** Computerworld, Informatica; **COLOMBIA'S** Computerworld Colombia; **CZECH REPUBLIC'S** Computerworld, Elektronika, PC World; **DENMARK'S** CAD/CAM WORLD, Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Windows World; **ECUADOR'S** PC World; **EGYPT'S** Computerworld Middle East, PC World Middle East; **FINLAND'S** MikroPC, Tietoviikko, Tietoverkko; **FRANCE'S** Distributique, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux; **GERMANY'S** Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Management, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit; **GREECE'S** Infoworld, PC Games; **HUNGARY'S** Alaplap, Computerworld SZT, PC World, PC Virlag; **INDIA'S** Computers & Communications; **IRELAND'S** Computerscope (Computerworld); **ISRAEL'S** Computerworld Israel, PC World Israel; **ITALY'S** Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; **JAPAN'S** Information Systems World, Computerworld Today, Nikkei Personal Computing (PCW), Macworld Japan, SunWorld Japan, Windows World; **KENYA'S** East African Computer News; **KOREA'S** Computerworld Korea, Macworld Korea, PC World Korea; **MEXICO'S** Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows; **THE NETHERLANDS'** Computable (CW), Computer! Totaal, LAN Magazine, MacWorld; **NEW ZEALAND'S** Computer Listings, Computerworld New Zealand, New Zealand PC World; **NIGERIA'S** PC World Africa; **NORWAY'S** Computerworld Norge, C/world, Lotusworld Norge, Macworld Norge, Networld, PC World Ekspress, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld, IDG Direct Response; **PANAMA'S** PC World Panama; **PERU'S** Computerworld Peru, PC World; **PEOPLE'S REPUBLIC OF CHINA'S** China Computerworld, China Infoworld, China Network World, PC World China, IDG Shenzhen's Computer News Digest, Electronics International, IDG HIGH TECH Beijing's New Product World; **PHILIPPINES'** Computerworld, PC World, **POLAND'S** Computerworld Poland, PC World/Komputer; **PORTUGAL'S** Cerebro/PC World, Correio Informatico/Computerworld, MacIn; **ROMANIA'S** PC World, Computerworld, **RUSSIA'S** Computerworld-Moscow, Mir-PC, Sety; **SLOVENIA'S** Monitor Magazine, **SOUTH AFRICA'S** Computing S.A., Network World S.A., Computer Mail, **SPAIN'S** Amiga World, Computerworld Espana, Communicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro); **SWEDEN'S** Attack, ComputerSweden, Corporate Computing, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Datalngenjoren, Maxi Data, Windows World; **SWITZERLAND'S** Computerworld Schweiz, Macworld Schweiz, **TAIWAN'S** Computerworld Taiwan, Global Computer Express, PC World Taiwan, **THAILAND'S** Thai Computerworld, **TURKEY'S** Computerworld Monitor, Macworld Turkiye, PC World Turkiye; **UKRAINE'S** Computerworld; **UNITED KINGDOM'S** Computing/Computerworld, Connexion/Network World, Lotus Magazine, Macworld, Sunworld, **UNITED STATES'** AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Desktop Video World, DOS Resource Guide, Electronic Entertainment Magazine, PlayRight, Power PC World, Federal Computer Week, Federal Integrator, GamePro, IDG Books, InfoWorld, InfoWorld Direct, Laser Event, Macworld, Multimedia World, Network World, NeXTWORLD, PC Letter, PC World, Publish, SunWorld, SWATPro, Video Event. **VENEZUELA'S** Computerworld Venezuela, MicroComputerworld Venezuela; **VIETNAM'S** PC World Vietnam.

POUR IT ON!

Searching for new ways to pour on your creativity? Fractal Design Painter® 3.0 is filled with a whole new lineup of outstanding features with something really cool for everyone!

Painter's award-winning heritage of advanced Natural-Media® painting and drawing tools have been combined with the revolutionary multiple floating selection capabilities originally pioneered with PainterX2™ — all in one spectacular product!

MULTIMEDIA GETS ANIMATED!

If you've been waiting for professional-quality desktop software to create cutting-edge, frame-by-frame animation for multimedia or video, Painter 3.0 is sure to get your reels rolling! All of the really cool features and special effects in Painter 3.0 can be easily applied to imported QuickTime® and Video for Windows™ files. Edit-out objects in individual frames — then retouch your movie frames with any of the countless brush and texture effects available. You can rotoscope your images as well as apply Painter sessions across a series of frames!

CREATE AN ENTIRELY NEW LOOK!

Easier to use Painter 3.0 offers yet another new way to paint or illustrate digitally with a wide variety of true-to-tradition realistic brushes that actually simulate loading a brush with multiple colors of paint. These great new brushes give your work a dynamic and expressive quality that you can control down to the smallest bristle!

Easy-to-Use Interface & Image Spraying!
A new user interface reduces on-screen clutter & increases your productivity. Plus, you can now paint with an awesome new brush called the Image Hose.™ Dabs of paint are replaced with a series of images or graphic elements for super-natural media effects!

A MYRIAD OF OTHER NEW FEATURES

Added snazzy new features in Painter 3.0 include: a new gradient composer; selective masking & color adjustment tools; a bezier frisket tool; automatic drop shadows; image warping; canvas size adjustment and page rotation for ergonomic tablet use. And naturally, new Painter 3.0 is available for Windows™ and Macintosh® platforms. But unlike other Mac applications, users get Painter 3.0 for Macintosh and Power Macintosh® *together* for the same low upgrade price! So pour it on, before time runs out!

Special Limited-Time Upgrade Price!

ONLY $149

Upgrade price for registered Painter 2.0 owners is $149 & $99 for registered PainterX2 owners. Offer good in the U.S. & Canada only & expires 12/31/94

To Order or for More Information

800-297-COOL

VISA, MASTERCARD & AMERICAN EXPRESS CARDS ACCEPTED

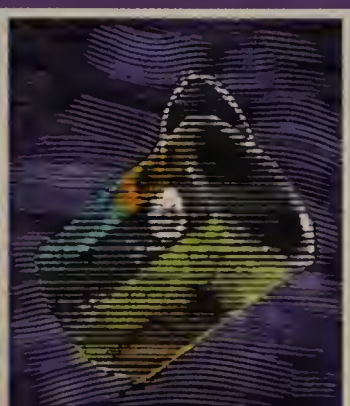
FRACTAL DESIGN CORPORATION

Fractal Design Painter® 3.0

Publish ★★★★ 1993 BYTE PC

©1994 Fractal Design Corporation. All rights reserved. Fractal Design Painter & Natural-Media are registered trademarks & PainterX2 & Image Hose are trademarks of Fractal Design Corporation. All other trademarks are the property of their respective owners.

Circle 190 on reader service card



AnthroCarts®!

AnthroCarts will knock your socks off! Imagine how great it'll be when you find the perfect furniture for your equipment — just the right size, tough as nails construction and dozens of accessories.

And you'll find our service so real and responsive, you'll get a kick out of ordering direct!

Call for our free catalog today!

Incredibly Strong.

Lifetime Warranty.

Lots of choices.

ANTHRO®

800-325-3841
6:00 AM to 6:00 PM PST, M-F

10450 SW Manhasset Drive
Tualatin, OR 97062
Fax: (800)325-0045

GSA contract no. GS-OOF-5040A. Available for OEM applications. Prices from $159.00. Anthro AnthroCart and Technology Furniture are registered trademarks of Anthro.

Macworld

EDITOR-IN-CHIEF Adrian Mello

EDITORIAL

EXECUTIVE EDITOR Deborah Branscum
SENIOR EDITOR/REVIEWS Carol Person
LAB MANAGER Lauren L. Black
DIRECTOR OF EDITORIAL OPERATIONS Jane Lagas
SENIOR ASSOCIATE EDITOR/FEATURES Galen Gruman
SENIOR ASSOCIATE EDITOR/AT WORK Dan Littman
SENIOR ASSOCIATE EDITOR/GRAPHICS James A. Martin
SENIOR ASSOCIATE EDITOR/NEWS Tom Moran
SENIOR ASSOCIATE EDITOR/FEATURES Charles Piller
ASSOCIATE EDITOR/GRAPHICS Cathy E. Abes
ASSOCIATE EDITOR/REVIEWS Marjorie Baer
ASSOCIATE EDITOR/NETWORKS Elizabeth Dougherty
ASSOCIATE EDITORS/LAB Mark Hurlow, Tim Warner
ASSISTANT EDITORS Suzanne Courteau, Jim Feeley, Joanna Pearlstein
ASSISTANT EDITOR/NEW PRODUCTS Cameron Crotty
ASSISTANT EDITOR/ONLINE Paul J. Devine
ASSISTANT EDITOR/REVIEWS Wendy Sharp
ASSISTANT EDITORS/LAB Matthew R. Clark, Danny Lee
ADMINISTRATIVE ASSISTANTS Matthew Hawn, Lyn Taylor
CONTRIBUTING EDITORS Robert C. Eckhardt, Erfert Fenton, Jim Heid, Guy Kawasaki, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, Steve Roth, Charles Seiter, Suzanne Stefanac, Franklin N. Tessler
INTERNATIONAL EDITORS
Osmund Iversen, Australia, 011 61 2 439-5133;
Marianne Fajstrup, Denmark, 011 4536 44 28 00;
Michael Thevenet, France, 011 33 1 49 04 79 00;
Stephan Scherzer, Germany, 011 49 89 3 60860;
Enrico Lotti, Italy, 011 39 2 58 011660;
Osamu Honma, Japan, 011 81 3 5276-0541;
Shin Cho, Korea, 011 82 2 579-8031;
Paul Molenaar, Netherlands, 011 31 23 354554;
Toralv Ostvang, Norway, 011 472 264 7725;
Alvaro Ibariez, Spain, 011 34 1 319 4014;
Nicklas Mattsson, Sweden, 011 46 8667-9180;
Cuno Schneeberger, Switzerland, 011 41 1 387 4429;
Cemal Balci, Turkey, 011 90 1 279 1180;
Peter Worlock, United Kingdom, 011 4471 831-9252

COPY EDIT AND EDITORIAL PRODUCTION

MANAGING EDITOR Charles Barrett
ASSISTANT MANAGING EDITOR Ruth Henrich
EDITORIAL PRODUCTION MANAGER Jeff Sacilotto
SENIOR COPY EDITOR Katherine L. Ulrich
COPY EDITORS D. Jacqueline Kan, Paul King
PRODUCTION EDITORS Lisa Brazieal, Doreen Engelmann

ART AND DESIGN

DESIGN DIRECTOR Dennis McLeod
ART DIRECTOR Joanne Hoffman
SENIOR DESIGNER Leslie Barton
SENIOR DESIGNER/INFORMATIONAL GRAPHICS Arne Hurty
ASSOCIATE ART DIRECTOR Kent Tayenaka
ASSISTANT ART DIRECTOR Sylvia Benvenuti
DESIGNER Hae Yuon Kim
ASSOCIATE DESIGNER Tim Johnson
SENIOR DESIGN ASSOCIATE Martha Katt
DESIGN ASSOCIATE Belinda Chlouber

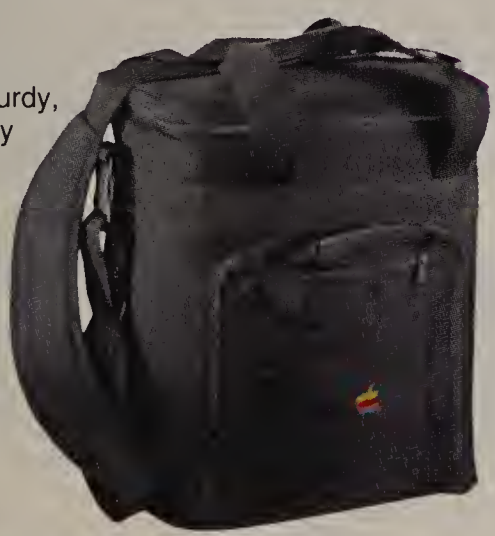
HERMANN MARKETING'S

APPLE GIFT SERIES

Apple Sweatshirts and Sweatpants—Cotton-blend sweatshirt with the five-color silkscreened Apple name. Cotton-blend sweatpants have a drawstring waist, elastic at the ankles, and the five-color Apple name screened on the right hip. Both in basic black or white. Pieces sold separately. Sweatshirt: Adult sizes S-XXL. Sweatpants: Adult sizes S-XL.
APL130 Black, APL152 White Sweatshirts $17.95
APL132 Black, APL192 White Sweatpants $17.95

Apple Leather PowerBook Valise—Crafted of glove-soft, top-grain leather, this well-made valise is designed to hold virtually everything. Padded with an inch of shock-absorbing foam, it protects your PowerBook and its accessories—even a cellular phone. A separate zip-down organizer stows all your travel needs, and an ample document portfolio expands accordian-style to include three legal-size file sections. Lifetime manufacturer's guarantee.
M00065 $249.95

Apple Macintosh Color Classic Bag—Made of sturdy, water-resistant, heavy-duty Cordura nylon. Padded interior pockets hold your computer, standard Apple keyboard and accessories. Features heavy-duty zippers, reinforced leather handles, outside zippered pocket and a cushioned, adjustable shoulder strap.
M00058 $99.95



Apple Malibu Jacket—Medium weight jacket with Supplex® nylon outershell and black 100% nylon lining. Features padded ski collar, heavy-duty zipper, elastic cuffs and two slash pockets. Embroidered Apple logo. Adult sizes M-XXL.
M00104 $54.95

Apple Ash Sweatshirt—Soft, comfortable oversized sweatshirt made from easy-care 80% cotton/20% polyester fleece, with color block insets on the sleeves. Embroidered Apple logo. Adult sizes M-XXL.
M00105 $53.95

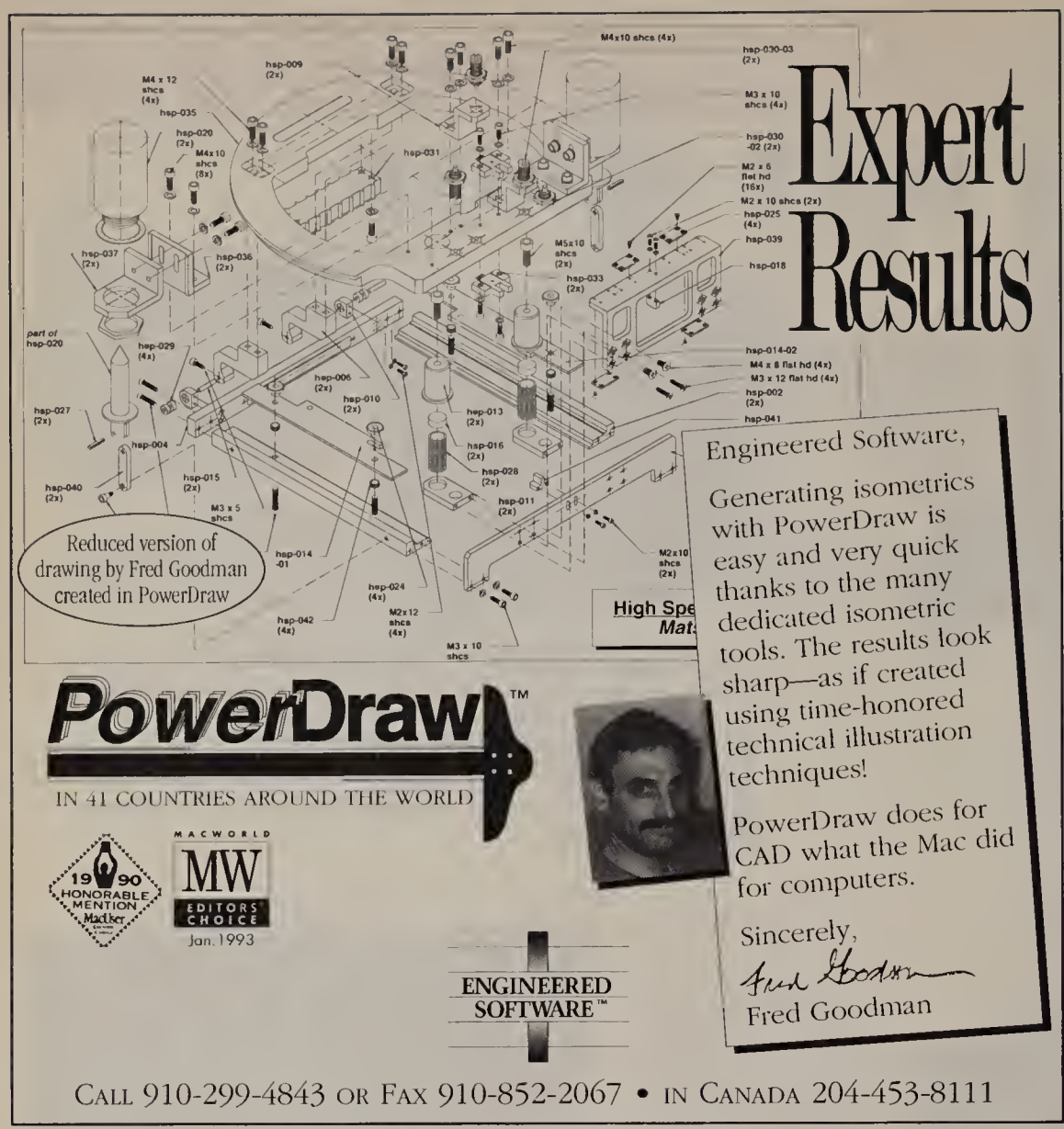
Apple Color PowerBook Bags—Made of tough 1,000 denier Cordura Plus padded nylon, these water-resistant bags neatly protect your PowerBook and accessories inside, and hold documents in gusseted pockets outside.
M00061 Teal, M00062 Gray, M00064 Burgundy
$89.95

TO ORDER CALL TOLL FREE
1-800-590-5005

HERMANN MARKETING
1400 NORTH PRICE ROAD • ST. LOUIS, MO 63132-2308

Hermann Marketing is an authorized supplier of Apple logoed merchandise.

Copyright 1994 Apple Computer, Inc. Apple, the Apple logo, Macintosh, Powerbook and Macintosh Color Classic are registered trademarks of Apple Computer, Inc.



Circle 12 on reader service card

POWERBOOK™ 500 SOLUTIONS

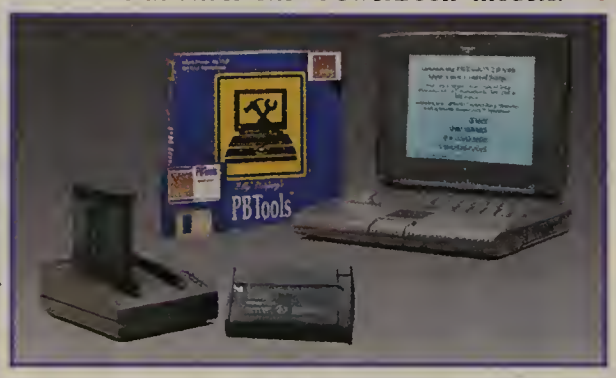
With the high energy demands of the 500 series, runtimes are always shorter than you would like. Mobile-Mac users constantly need more power. VST Power Systems, Inc. offers award-winning products to keep your **POWERBOOK UNPLUGGED**™.

SMARTCHARGER™ 500

VST's **SMARTCHARGER 500** is the first external charger compatible with PowerBook 500 Intelligent Batteries. **SMARTCHARGER 500** fully charges two batteries in under one hour, getting your PowerBook running sooner so you can work longer. The charger implements all required Apple EMM protocols for Smart-Charging, and monitors state of charge, charge rate, and temperature parameters. **SMARTCHARGER 500** is available alone, or bundled with an Apple AC Adapter (which powers the charger).

PBTOOLS™ 2.0

PBTOOLS version **2.0** is the first software package to include Apple's new Control Strip and Modules. It is compatible with all PowerBook models. **PBTOOLS** helps conserve power with user definable screen, CPU and drive timeouts, providing longer runtimes. Version 2.0 features new **PBTOOLS** Control Strip modules, including Switch-A-Roo, a module designed to quickly switch all your screens between any two modes. **PBTOOLS 2.0** offers full support for the new PowerBook 500 series with its dual intelligent batteries.



VST POWER SYSTEMS INCORPORATED

VST Power Systems • 1620 Sudbury Road • Concord, MA 01742
(508) 287-4600 fax (508) 287-4068

Circle 73 on reader service card

Macworld

ADVERTISING SALES

VICE PRESIDENT/ASSOCIATE PUBLISHER	Shannon D. Dolan (415/243-0505)
BUSINESS MANAGER/AD SALES	Lisa Buckingham (415/974-7344)
ADMINISTRATIVE ASSISTANT	Tira McDonald (415/978-3160)
ADMINISTRATIVE ASSISTANT	Anna Noetzel (415/974-7315)
NATIONAL ACCOUNTS MANAGER	Lois Brennan (415/978-3262)
ACCOUNT EXECUTIVE	Heather Miller (415/978-3257)
NATIONAL ACCOUNTS MANAGER	Stephen McGill (415/978-3155)
ACCOUNT EXECUTIVE	Christine Wong (415/978-3192)
DIRECTOR OF NATIONAL ACCOUNTS	Nancy A. Coy (714/250-1307)
ACCOUNT EXECUTIVE	Marsha K. Bowers (415/978-3276)
ADMINISTRATIVE ASSISTANT	Selin S. Gabriel
DIRECTOR OF NATIONAL ACCOUNTS	Joan Kelly (508/872-8600)
NATIONAL ACCOUNTS MANAGER	Paul Bonarrigo (508/872-8600)
ACCOUNT EXECUTIVE	Jo-Ann Sturtridge (415/978-3164)
ADMINISTRATIVE ASSISTANT	Alexandra Dileso (508/872-8600)
NATIONAL ACCOUNTS MANAGER	Lisa Ladle (708/827-4477)
ACCOUNT EXECUTIVE	Jo-Ann Sturtridge (415/978-3164)
ADMINISTRATIVE ASSISTANT	Kathy Poppenhagen (708/827-4477)
DIRECTOR OF TELESALES OPERATIONS	Stephen R. Plevin (415/978-3138)
ACCOUNT MANAGERS/MAIL ORDER	Edward Ramirez (415/974-7413), Lisa Weisberg (415/978-3117)
MACWORLD SHOPPER	800/888-8622 Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414)

MACWORLD GLOBAL PRODUCT SUPPORT CENTER

DIRECTOR OF MARKETING AND COMMUNICATIONS	Kimberlee A. Luedee
TECHNICAL MANAGER	Chip Carman

MARKET RESEARCH

RESEARCH DIRECTOR	Linda Lawrence
RESEARCH SERVICES COORDINATOR	Jason Douglas

MARKETING

MARKETING DIRECTOR	Cynthia Koral
SENIOR MARKETING MANAGER	Anne Nichols
SALES DEVELOPMENT MANAGER	Jeff Julian
ASSISTANT MARKETING MANAGER	Rhona Hamilton

CIRCULATION

DIRECTOR OF CIRCULATION	Angelina Beitia
SINGLE-COPY SALES DIRECTOR	George Clark
CIRCULATION MANAGER	Lori Hitchcock
NEWSSTAND SALES MANAGER	Martin Garchar
SUBSCRIPTION MANAGER	Elizabeth Jensen
DIRECT MARKETING MANAGER	Jenifer Carini-Clarkson
PROMOTION MANAGER	Kelvin Gee
NEWSSTAND COORDINATOR	Dalia Schwartz
SUBSCRIPTION COORDINATOR	Deirdre Dugan
SUBSCRIPTION INQUIRIES	800/288-6848

PRODUCTION

VICE PRESIDENT/DIRECTOR OF MANUFACTURING	Anne Foley
PRODUCTION MANAGER	Cynthia Mazzola
BILLING INFORMATION MANAGER	So Fong Yip
AD TRAFFIC COORDINATOR	Shellie Anderson
DTP COORDINATOR	Clayton Haberman
BILLING ASSISTANT	Lily Cheung

For Internet access,

there's UNIX. And there's us.

MicroPhone™ Pro.

Cruise the Information Superhighway with Macintosh ease.

A world of information and adventure awaits you on the Internet. That is, *if* you can find your way around. It's no small "if" for the unaided Macintosh, because the Internet can be a very user-hostile place — a minefield of obscure UNIX commands like CHMOD, PWD, RMDIR, and GRE . Whatever that means. It's precisely what you bought a Macintosh to avoid.

But there *is* a way to bypass UNIX-speak: MicroPhone™ Pro, the Macintosh communications and connectivity tool. With ingenious utilities like Mail and News — plus special Internet tools like MacTCP, SLIP, Fetch, and TurboGopher — MicroPhone Pro lets you use your familiar Macintosh interface for everything.

Dialing up, logging on, downloading data and applications, browsing, online research, checking messages, posting e-mail, the whole works. No UNIX jargon, no command-line interface. MicroPhone Pro makes it all Mac-and-mouseclick simple.

It's your fastest, easiest Internet access route, and much more besides, all for a special introductory price of only $195. Which is just what you'd expect from Software Ventures, the leader in advanced Macintosh communications with more teleconnectivity software installed worldwide than anyone else.

Call us at **1-800-336-6477** for your nearest MicroPhone Pro dealer. And cruise the Internet like a true superhighway. Instead of an obstacle course.

SOFTWARE VENTURES

© 1985-1994 Software Ventures Corporation, 2907 Claremont Ave., Berkeley, CA 94705. (510) 644-3232, Fax (510) 848-0885.
MicroPhone is a trademark of Software Ventures Corporation. All other names are trademarks or registered trademarks of their respective companies.

Circle 213 on reader service card

PowerTable ergonomics. The other key to productivity.

Your Mac got up to speed. Did you? Using a more powerful computer means new tasks that take more time! Now comfort becomes a real issue.

Unlike most other computer tables in its price range, PowerTable's many features include adjustable keyboard surfaces, which reduces fatigue. Call today for a free catalog.

PowerTable®
More quality for your money.
800-722-6263

Tables from $299.

Cabinets from $169.

ScanCo
P.O. Box 3217, Redmond, WA 98073-3217. (206) 487-2618

PowerTable design is patent pending. PowerTable is a trademark of Scandinavian Computer Furniture, Inc.

Fusion Digital Media™ presents... **the digital media library**

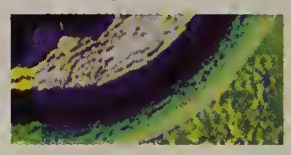
A comprehensive high quality series for ***multimedia development***

digital media library

volume 1 • **Power, Speed, Energy**
volume 2 • **Old & New**
volume 3 • **Soft & Hard**
volume 4 • **Senses**
volume 5 • **Elements**

Build superior multimedia productions with the Fusion Digital Media™Library. Choose from an exciting array of original and artistically enhanced digital images, custom composed music scores, high quality contemporary QuickTime Movies, and More!

$79.95 for Individual Volumes
Special Discount $329.95 for Entire Library



With every **Digital Media Library CD** you get...

- 400 + Original and Artistically Enhanced Images
- High Quality QuickTime Movies
- Dynamic Morphs
- Custom Composed Music Scores
- Navigational Controls
- Instructive Demos (Mac only)

QuickTime and the QuickTime logo are trademarks of Apple Computer, Inc. used under license. Copyright © 1994 Fusion Digital Media, Inc. and its licensors. All rights reserved.

Plus, these free search and translation tools...

- DeBabelizer® Lite LE (Mac Only)
- Kudo® Image Browser™
- Fusion Digital Media's™ exclusive Digital Image Idea Pad™ (Mac Only)
- MoviePlayer
- Video for Windows

Each package contains 2 CD-ROMs at a single disk price:1 Windows and 1 Mac for design flexibility.

Call now to order 1 800 910 0222

Circle 274 on reader service card

Macworld

HOW TO CONTACT MACWORLD

SUBSCRIPTION QUESTIONS
Mainland USA 800/288-6848
All other locations 303/447-9330
or write Subscription Services
P.O. Box 54529
Boulder, CO 80322-4529

MACWORLD ONLINE
Contact *Macworld* editors directly via the Macworld areas on America Online and eWorld. On these services, readers can search current and past issues, exchange messages with editors and other readers, and attend live online events. Readers can also send electronic mail via CompuServe (70370,702), MCI Mail (294-8078), AppleLink (Macworld1), or Internet (macworld@macworld.com).

MACWORLD IN MICROFORM
Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

BACK ISSUES OF MACWORLD
Write to Back Issues of *Macworld*, c/o Snyder Newell, Inc., P.O. Box 7046, San Francisco, CA 94120-9727; $6 per issue ($20 overseas). Prepayment in U.S. funds necessary. Make checks and money orders payable to Macworld Magazine.

MACWORLD EDITORIAL
MAIL OR COURIER Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.
AppleLink: Macworld1
CompuServe: 70370, 702 Fax: 415/442-0766
LETTERS TO THE EDITOR All written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to Letters to the Editor.
QUESTIONS AND QUICK TIPS Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole. Please include your name and address.
CONSUMER ADVOCATE Been burned? Really steamed? Direct your concerns (by mail or electronically) to *Conspicuous Consumer*, Deborah Branscum.
NEW PRODUCTS AND UPDATES Direct press releases and product announcements (by mail or electronically) and shrink-wrapped software upgrades (by mail or courier) to *New Products* Editor.
BUGS & TURKEYS Mail in descriptions of turkeys (flaws in conception or design) or bugs (defects or flaws in execution); copies of correspondence with vendor or telephone contact notes (if any); and your telephone number, mailing address, and T-shirt size.
STREETWISE SHOPPER To obtain an application for inclusion of special product promotions in *Streetwise Shopper*, vendors and resellers should contact Charles Barrett (by mail or electronically).
REPRINTS AND PHOTOCOPY PERMISSION Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use *only*—for the flat fee of $1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970. Address requests for reprint orders and for permission to copy editorial for other purposes to Reprints and Permissions, Editorial Dept.
WRITING FOR MACWORLD Do not send us unsolicited manuscripts. If you're interested in writing for *Macworld*, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to Writer's Guidelines, Editorial Dept.

FOUNDER David Bunnell
FOUNDING EDITOR Andrew Fluegelman 1943–1985

Macworld is a publication of Macworld Communications, Inc. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. *Macworld, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, Desktop Critic, Quick Tips, Star Ratings,* and *Conspicuous Consumer* are registered trademarks of International Data Group, Inc. *Power PC World* is a trademark of IDG, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACLETTER and POWERBOOK are trademarks of Apple Computer, Inc. Printed in the United States of America.

Copyright © 1994 Macworld Communications, Inc. All rights reserved.
Macworld is a member of IDG Communications, the world's largest publisher of computer-related information.

BPA INTERNATIONAL IDG

Nothing Better Than La Cie's Joule Portable.

Dimensions:
6.5" x 9" x 1.3"

New!

La Cie Joule Portable.™ The Only Hard Drive Without Compromises.

Joule Portable 1080MB

$769

La Cie has done it again.
The best just keeps getting better. It's the smallest, lightest, quietest, most portable full-size drive on the market.

There are no compromises.
Joule Portable has all the features: Quickset™ adapters for easy plug and play, La Cie Term™ switchable, digital active SCSI termination for a clean signal, front facing power switch and activity lights for operating convenience, dual connectors for daisy chaining your drives and other peripherals, Silverlining™ disk management software and unsurpassed value. Performing alone, or plugged into the Joule Modular system there is nothing better than the Joule Portable.

FREE
with purchase:

Silverlining 5.6
$99 value

Joule Travel Case
$24.99 value

DRIVE COMPARISON:

	La Cie Joule Portable	APS SR2000	Spin Tornado	La Cie Tsunami
Lightest		Nope	Nope	Nope
Smallest		Nope	Nope	Nope
Quietest		No Way	No Way	No Way
Most Portable		Not	Not	Not
Cable Free Cartridge Modularity		Nope	Nope	Nope
La Cie Term™ Active Termination		DATerm™ Active Termination	DCR Active Termination	Switchable Active Termination
Front Power Switch		Rear Power Switch	Front Power Switch	Rear Power Switch
Fortune 500		Nope	Nope	Fortune 500

Tested by independent lab 8/94

LACIE LIMITED
A QUANTUM COMPANY

To order call toll free:

800-999-1157

Mon.-Fri. 5AM-7PM & Sat. 8AM-NOON PST • International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007 VISA MasterCard American Express C.O.D. and approved purchase orders accepted.

* Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Joule Portable, Quickset, La Cie Term, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd. a Quantum Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without recourse.
© Copyright 1994 La Cie, Ltd. All rights reserved.

The Joule Advantages

Joule delivers power, portability, expandability and your choice of media with towering style. Unconventionally easy to use, and uniquely versatile.

$399
540MB

Silverlining™ FREE with La Cie Drives!

Joule Portable

The Joule Portable features high performance hard drives from Quantum for advanced drive technology. Modules with mounts are also a snap to install in a single, vertically interlocked system.

	Internal with Bracket	Joule Portable	Module with Mount
2.5" HARD DRIVES - Quantum – *2 Year Warranty*			
170MB	$229	$299	$299
256MB	$299	$369	$369
340MB	$379	$449	$449
514MB	$499	$569	$569
3.5" HARD DRIVES - Quantum – *2 or 5 Year Warranties*			
170MB	$179	$249	$249
270MB	$199	$269	$269
340MB	$249	$319	$319
540MB	$329	$399	$399
1080MB	$699	$769	$769
1400MB	$839	$899	$899
2100MB	$1169	$1229	$1229
3.5" HARD DRIVES - DEC – *2 Yr. Warranty*			
1200MB	Call	Call	Call
2400MB	Call	Call	Call
4900MB	Call	Call	Call
3.5" HARD DRIVES - Seagate Barracuda – *1 Yr. Warranty*			
1650MB	$1499	$1569	$1569
2050MB	$1699	$1769	$1769

For inexpensive back-up and archiving, Joule removable media modules come in SyQuest®, Fujitsu optical, DAT and tape drive mechanisms.

	Internal with Bracket	Joule Portable	Module with Mount
REMOVABLE DRIVES - SyQuest – *Inc. 1 FREE cartridge*			
105MB	$299	$369	$369
270MB	$459	$499	$499
REMOVABLE DRIVES - Optical – *Inc. 1 FREE 3.5" cartridge*			
230MB	$929	$999	$999
REMOVABLE DRIVES - Tape* – *Inc. 1 FREE tape cartridge*			
600MB	$729	$789	$789
* Comes with Retrospect™			
REMOVABLE DRIVES - DAT Tape* – *Inc. 1 FREE DAT Tape*			
5.0GB	$999	$1069	$1069
8.0GB	$1149	$1199	$1199
* Comes with Retrospect™			
JOULE PORTABLE DOCK WITHOUT DRIVE			$149

REMOVABLE CARTRIDGES

44MB SyQuest	$69	105MB SyQuest	$69
88MB SyQuest	$79	270MB SyQuest	$79
200MB SyQuest	$89	230MB Optical	$79

Industrial Design Excellence Award SILVER 1994

I.D. Magazine 40TH ANNUAL DESIGN REVIEW WINNER 1994

30 Day Money Back Guarantee*

To order call toll free:

800-999-1157

Mon.-Fri. 5AM-7PM & Sat. 8AM-NOON PST • International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007 VISA, MasterCard, American Express, C.O.D. and approved purchase orders accepted

LACIE LIMITED
A QUANTUM COMPANY

* Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Joule Portable, Quickset, La Cie Term, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without recourse.

© Copyright 1994 La Cie, Ltd. All rights reserved

Really Stack Up!

Unlimited Toll-Free Tech Support

Joule offers a base for future cable-free expansion and modularity. Joule bases can operate alone or support up to 6 additional drive modules.

JOULE ADVANTAGES:

- Simple, easy installation.
- Advanced drive technology.
- Easy SCSI ID switching.
- Digital active SCSI termination.
- Built-in path to storage expansion.
- Surge protected universal power supply.
- Silverlining Hard Disk Management.
- Up-front power switch and status LED's.
- Replaces cluttered deskyop.

Silverlining™ FREE with La Cie Drives!

PC COMPATIBLE

Joule Bases

$969 1400MB

3.5" HARD DRIVES
- Quantum – *2 or 5 Year Warranties*

340MB	$359
540MB	$469
1080MB	$839
1400MB	$969

3.5" HARD DRIVES
- DEC – *2 Year Warranty*

1.2GB	Call
2.4GB	Call

REMOVABLE DRIVES - Optical*

230MB $1069
*Includes 1 FREE 3.5" cartridge

REMOVABLE DRIVES
- SyQuest*

105MB	$419
270MB	$569

*Includes 1 FREE cartridge

BASE W/O DRIVE $199

Joule RAID

Configured with levels RAID-0, RAID-1, RAID-4, and RAID-5.

2.0GB	$1899
2.8GB	$2499
4.2GB	$2999
8.4GB	$4999
16.8GB	$8999

SILVERSCANNER II

Gorgeous color. Fine image detail. Your artwork will pop with clean bright scans. Production quality with 1600 dpi and 8 bits per color.

PACKAGE 1
Silverscanner II with Color It! & Read-It OCR Pro. SAVE $100 $1499

PACKAGE 2
Silverscanner II with Photoshop & Read-It OCR Pro. $1799

PACKAGE 3
Silverscanner II with Color It! & Read-It OCR Pro & Color Studio. $1999

PACKAGE 4
Silverscanner II with Photoshop, Read-It OCR Pro & Color Studio. $2099

Transparency Adapter
$799

Sheet Feeder Attachment
$499

Circle 52 on reader service card

NOW WI
10,000 CLIP ART IMAGE
2,000 TRUETYPE FONTS ON CD-RO

HOP ON!

IF YOU'RE NOT USING CANVAS™... YOU'RE MISSING OUT.
When the rubber hits the road, you can't afford to spin your wheels using yesterday's under-powered graphics software. You need drawing tools designed for today's high-tech tasks. Tools that deliver unrivaled speed and accuracy without inhibitions. You also need them now, not years from now.

COMES FULLY LOADED.
Canvas fuses precision drawing, page layout, text handling, boardroom presentations and painting features in one easy-to-master application. With just the right combination of tools to help you enjoy your work and become more productive. Without sacrificing quality or compromising your creativity.

PLENTY OF HORSEPOWER AVAILABLE.
Canvas has all the drawing tools and features you'll probably ever need. From freehand Bézier curves to 1/65,000th-inch precision and fifteen flavors of auto-dimensioning. From slide presentations with QuickTime™ support to built-in color separations. From precision type handling to over a dozen industry-standard import/export tools, including EPSF, DXF and CVS (Canvas for Windows).

NOW AN EVEN BETTER VALUE.
Canvas now includes a CD-ROM tanked-up with over 10,000 premium clip art images and symbols covering just about every subject imaginable and 2,000 professional TrueType™ display, text and novelty fonts. Save time and effort by using our images as the starting point of your next project.

ACCELERATED FOR POWER MACINTOSH.
The new native Power Macintosh version of Canvas 3.5 gives you an unprecedented level of performance – as much as 300 percent faster. And if you purchased Canvas 3.5 after March 14, 1994 you are eligible to receive the Power Macintosh version for FREE when it ships this fall.

DON'T MISS OUT ANY LONGER.
Stop grinding your gears with old technology. Quit wasting valuable time and energy with outdated graphics tools. Dust off your leather jacket, put on your baddest shades, then visit your favorite Canvas reseller today. Or call 1-800-733-6322 to order, and hop on for the ride of your life. Helmet not included.

CANVAS

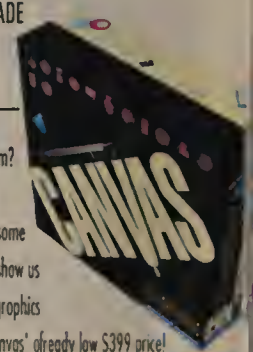
THE HIGH-PERFORMANCE DRAWING ENVIRONMENT

WINDOWS™ Macintosh®

MONEY BACK GUARANTEE 30 DAY

$149.95 COMPETITIVE UPGRADE

Still using some other graphics program? Now we've made switching to Canvas even easier! Trade in that scooter for some real precision drawing power. Simply show us proof of ownership of any Macintosh graphics program and chop nearly $250 off Canvas' already low $399 price!



DENEBA SOFTWARE 7400 S.W. 87th Avenue, Miami, Florida 33173 • Tel (305) 596-5644 • Fax (305) 273-9069
Major credit cards accepted. Add $10 shipping in the US and $15 in Canada. Call for shipping costs elsewhere. ©1994 Deneba Systems, Inc. Canvas is a trademark of Deneba Software. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. All other trademarks are the property of their respective owners. Offer valid in the United States and Canada and is subject to termination or change without notice. This offer is not valid with any other promotion or offer.

Circle 57 on reader service card

BY ADRIAN MELLO

The Document Range War

OLE and OpenDoc battle for developers' attention

FOR THE LAST YEAR OR TWO Apple has been describing OpenDoc as an ambitious new way of letting customers unify documents and applications by breaking down the artificial constraints of separate application programs. OpenDoc promises to help users focus on their documents by letting them access many different application tools in the same document without moving in and out of separate applications. Microsoft has its own technology, called OLE (Object Linking and Embedding), that lets users work in one document with different application tools. OLE is here today, but the upcoming OpenDoc appears to be a much more elegant solution. When OpenDoc arrives, Microsoft's OLE 2.0 programs should appear clunky and brutish by comparison. (See the feature "OpenDoc and OLE 2.0" in this issue.)

There is an appealing nobility about OpenDoc's approach: it is more efficient and more transparent for end users, and it will be nonproprietary. In my estimation, OpenDoc is clearly the better technology for end users, but that doesn't mean OpenDoc will garner more support from developers who are considering how to use either or both technologies to compete. But as competition has increased and profit margins have fallen, developers have become much more careful about how they commit their resources.

Development Effort

To make the document-centrism of OpenDoc and OLE 2.0 a reality, developers must redesign their programs so that each can first communicate to other modules what objects it can handle, and then the various modules must treat those objects consistently so users don't get confused. This object technology will have to be implemented at the system level, like QuickTime and the Finder. Developers will have to bundle their extensions with OpenDoc or OLE; Apple does plan on integrating OpenDoc into the next generation of the Mac OS, due out about a year from now.

Implementing OpenDoc means writing programs from scratch: developers must dedicate small tools to individual tasks and make sure those tools work together. If you have a spelling-checker tool and a hyphenation tool from different vendors, you want both to work with the text-editing tool you're using. To implement OLE, developers must either extract functions from a big program and turn them into independent programs or they must design tools that plug into a big program.

Windows programmers have complained about OLE 2.0 ever since Microsoft published the specification nearly two years ago, because it requires them to manage cross-application interactions they never had to worry about before, and at the same time it forces them to change how their current software works. Plus, OLE is a moving target: Microsoft keeps promoting development for new OLE versions planned for its forthcoming Chicago (Windows 4.0) and Cairo (Windows NT 4.0) operating systems. OpenDoc developers are likely to face similar hurdles. Apple and its OpenDoc partners have said that OpenDoc will also be revised to add new features about a year after it ships.

One illustration of the object-software challenge is Microsoft's own experience. The company's Office programs don't use OLE objects everywhere they could. For example, the new versions of Excel, Word, and PowerPoint all use OLE 2.0 but still have separate spelling checkers; and PowerPoint and Word have their own table tools. Even mighty Microsoft has limited resources, and full integration of OLE in these three programs (for both Windows and the Mac) would have required immense work. It will be several software generations before Microsoft Office fully exploits OLE 2.0.

Some of the Players

Outside of Apple, WordPerfect is OpenDoc's biggest booster—because it represents a way to break up Microsoft's near-monopoly of the word processor market, by getting users to switch to OpenDoc-compatible tools. A few companies, including Claris, CE Software, and Frame Technology, have committed to using either or both object technologies. And although OpenDoc got better reviews than OLE from most developers *Macworld* surveyed, even pro-OpenDoc developers are hedging their bets: "It's not really a one-or-the-other type of choice. No one, including Claris, knows which one will be the de facto standard," explained Larry Slotnick, vice president of development for Apple's Claris subsidiary.

To get a better idea of how a document-based architecture is likely to grow, *Macworld* asked 20 companies about their plans for OpenDoc and OLE 2.0. Most companies were fairly reserved and gave nonanswers like, "OpenDoc is a promising technology that we are exploring." About a half dozen gave no answers at all. A few explained their caution.

• Typical was a comment from Peter Warren, marketing director at Quark: "We offered AppleScript and [UserLand]

continues

Frontier [scripting] support a while ago but are only now seeing useful scripts. We expected more end-user support. And we're not sure if OpenDoc will have the same time lag before anyone cares."

• David Schargel, president of Aladdin Systems, had other concerns: "Will vendors be able to price [OpenDoc] parts high enough to justify their investment? How will parts be distributed?"

• The bottom line for Steven Saltzman, then president of Now Software, was the payoff for investing in object technology. "Since it's a fair amount of development effort, we're not going to commit to one [technology] until we've got a pretty strong grip on which is ultimately going to win. It may be that both will win," he said.

• Aldus is looking at implementing the two technologies in future products, but said it's too early to commit to specific products or times.

At present, Microsoft's OLE 2.0 has generated much interest, if not acclaim, among developers because OLE makes integrating multiple programs easier. But that enthusiasm is mostly among Windows developers, who see linking technology as a way to get around the issues of data transfer in a heterogeneous world. Expect OLE 2.0, if it goes beyond Microsoft programs, to be adopted first by cross-platform developers who want Macs to have the same capabilities as Windows systems. Aldus may be one of those, since it has demonstrated prototype software with OLE 2.0 compatibility.

OpenDoc is a more open question because it is still a promise. So why would developers choose OpenDoc over OLE when they can take advantage of OLE now? Several technical advantages make OpenDoc an appealing alternative, including the ability to keep multiple drafts, and an emphasis on smaller tools (and thus lower RAM requirements and faster switching between tools).

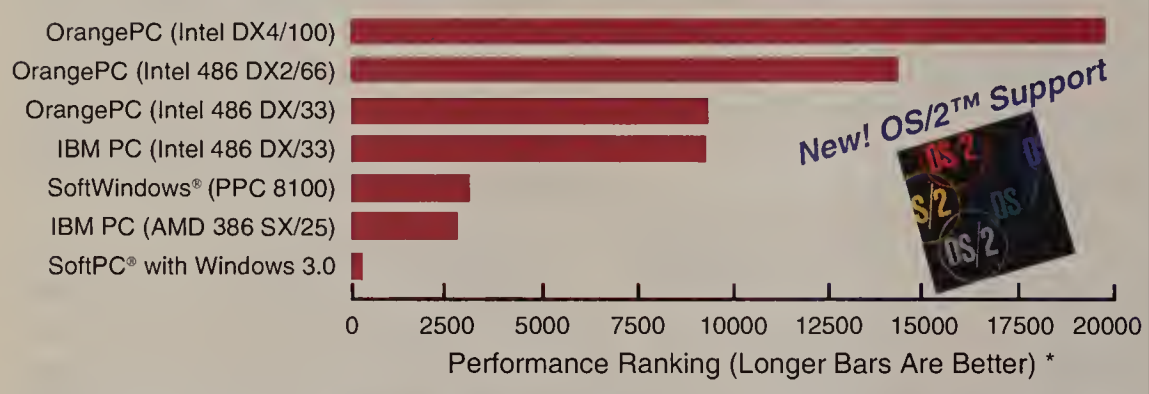
Perhaps the most important reason why developers may favor OpenDoc is the strong anti-Microsoft feeling in much of the development community. This feeling is fueled by the fear that cooperating with Microsoft today could mean being overwhelmed later by the company's seemingly endless expansion into ever-more application areas. The fact that OLE is controlled by one industry-dominating vendor, Microsoft, alienates major competitors such as Lotus, WordPerfect, and to a lesser extent, Apple.

Despite misgivings about Microsoft, developers are seriously considering support of OLE. Microsoft wields so much influence that developing for a competing technology may not make financial sense. As much as developers might prefer alternatives to Microsoft, they need to maintain high compatibility, especially in the PC market. That affects the Mac market, since so many developers make Mac programs function-compatible with their Windows versions.

Apple and other advocates of OpenDoc will have to convince developers that there is a compelling financial reason to develop for OpenDoc. The switch from big programs to smaller object-oriented tools won't be easy. The next step is for Apple to support developers with well-chosen technical and marketing programs for OpenDoc. The advantages of innovation can be realized only if developers translate technology into tangible business opportunities. Until then we may have to wait patiently while the new document-based technologies slowly evolve. m

Additional reporting by JIM FEELEY, GALEN GRUMAN, and JOANNA PEARLSTEIN.

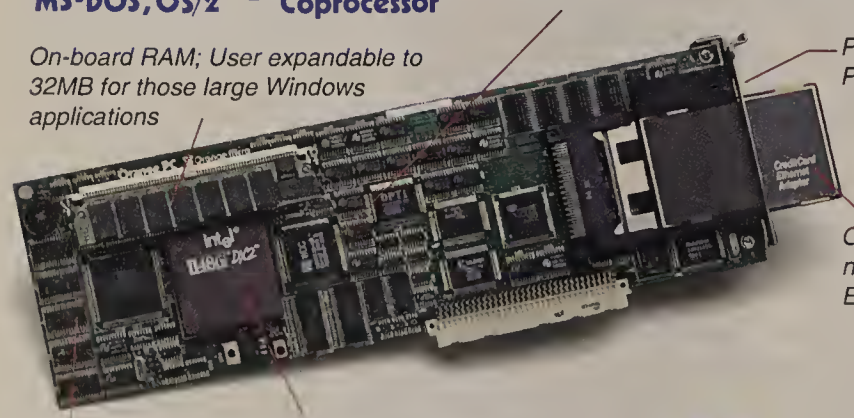
How fast is Windows™ on a Macintosh®?



It's blazingly fast with our newest version of OrangePC. Incorporating an Intel® DX4/100, the OrangePC NuBus card is a state-of-the-art solution for running your MS-DOS/Windows™ or OS/2 based applications inside a Macintosh window. Unlike lumbering DOS software based emulators, OrangePC packs the power and the features to get the job done for serious power users. OrangePC combines dramatic 100 MHz 486 performance with a 128K cache, 32 megabytes of on-board memory, SuperVGA graphics, and PCMCIA for all your expansion needs. Also, the OrangePC offers high-speed, seamless, network connectivity. It's like having a complete IBM PC inside your Mac which can run DOS or OS/2 applications simultaneously and independently of your Mac's 680X0 or Power Macintosh programs.

So if you want the fastest Windows performance for your Macintosh or Power Macintosh, call us now for your own OrangePC. Priced from $700.

Orange® PC
MS-DOS®, OS/2® Coprocessor



MW ★★★★ Mac World August 94
★★★★ MacUser June/93
yes it runs with NetWare
MW EDITORS' CHOICE

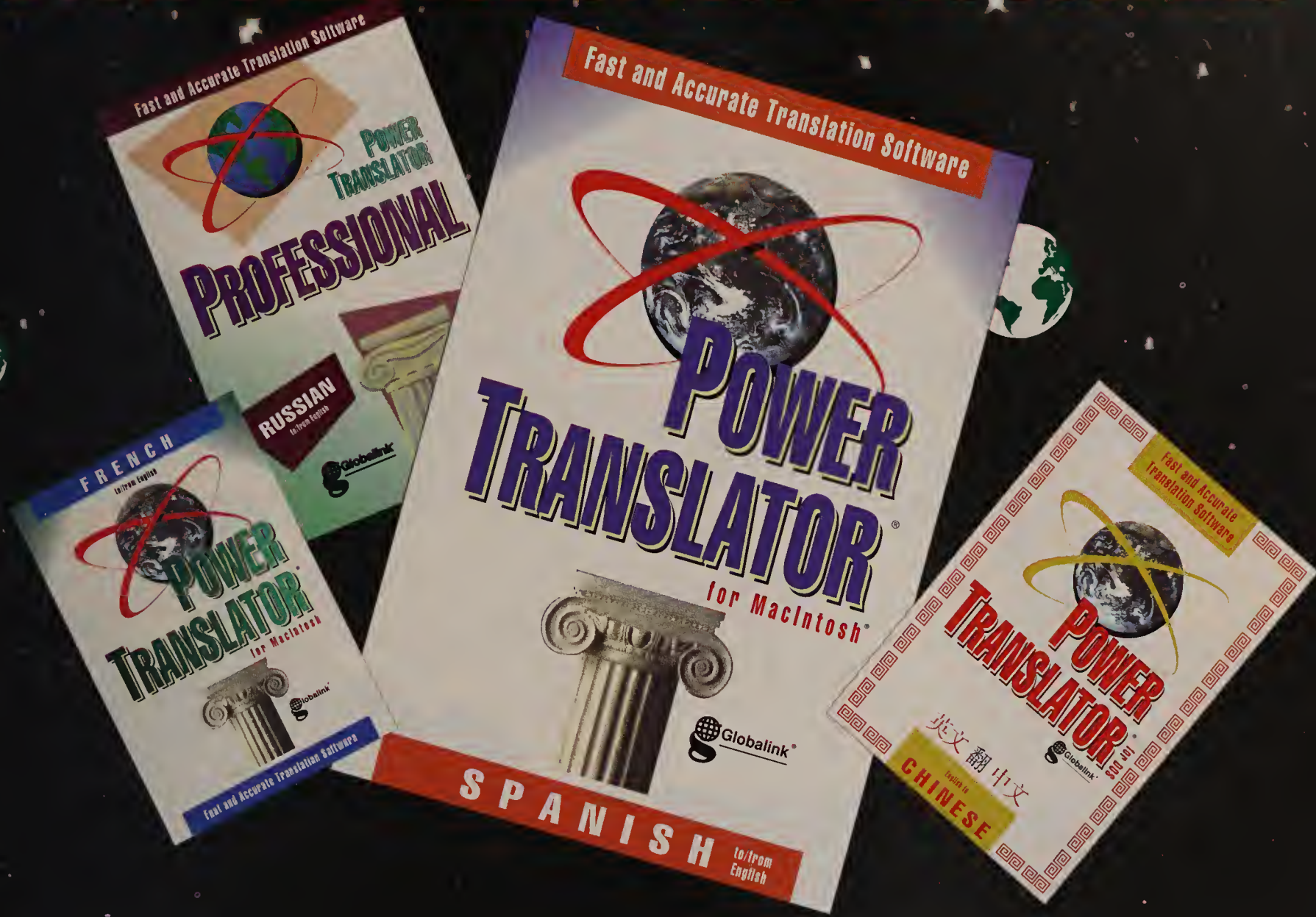
Orange Micro® inc.
"14 Years of Innovation and Excellence"
1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772

* Benchmark results are based on the Processor Harmonic measurements from PC Bench version 7.01. SoftPC with Windows was run on a Quadra 700. SoftWindows was run on a Power Macintosh 8100.
© Orange Micro, Inc., 1994

Circle 33 on reader service card

EXPAND YOUR WORLD WITH TRANSLATION SOFTWARE

New Professional Windows Version!
Network, word processor support, WYSIWYG text formatting



Imagine how far you could expand your horizons if you could communicate in languages other than your own. Now you can with Power Translator®, the fastest and most cost-effective way to produce highly accurate draft translations of letters, faxes, contracts, brochures, and much more.

Bilingual screens and manuals make Power Translator easy to learn and use. You can enter text interactively, import a text file, or scan in your entire text. Power Translator also comes in a **PROFESSIONAL** version that includes industry-specific dictionaries, such as Legal, Telecommunications, and Computer, that you can customize to meet your requirements.

Translate from English to or from any of these languages:

- **Spanish**
- **French**
- **German**
- **Russian**
- **Chinese** (English to Chinese only).

Power Translator products are available for Windows, Macintosh, DOS, OS/2, and UNIX.

Power Translator and Power Translator Professional are available from your local computer retail store. Or call:

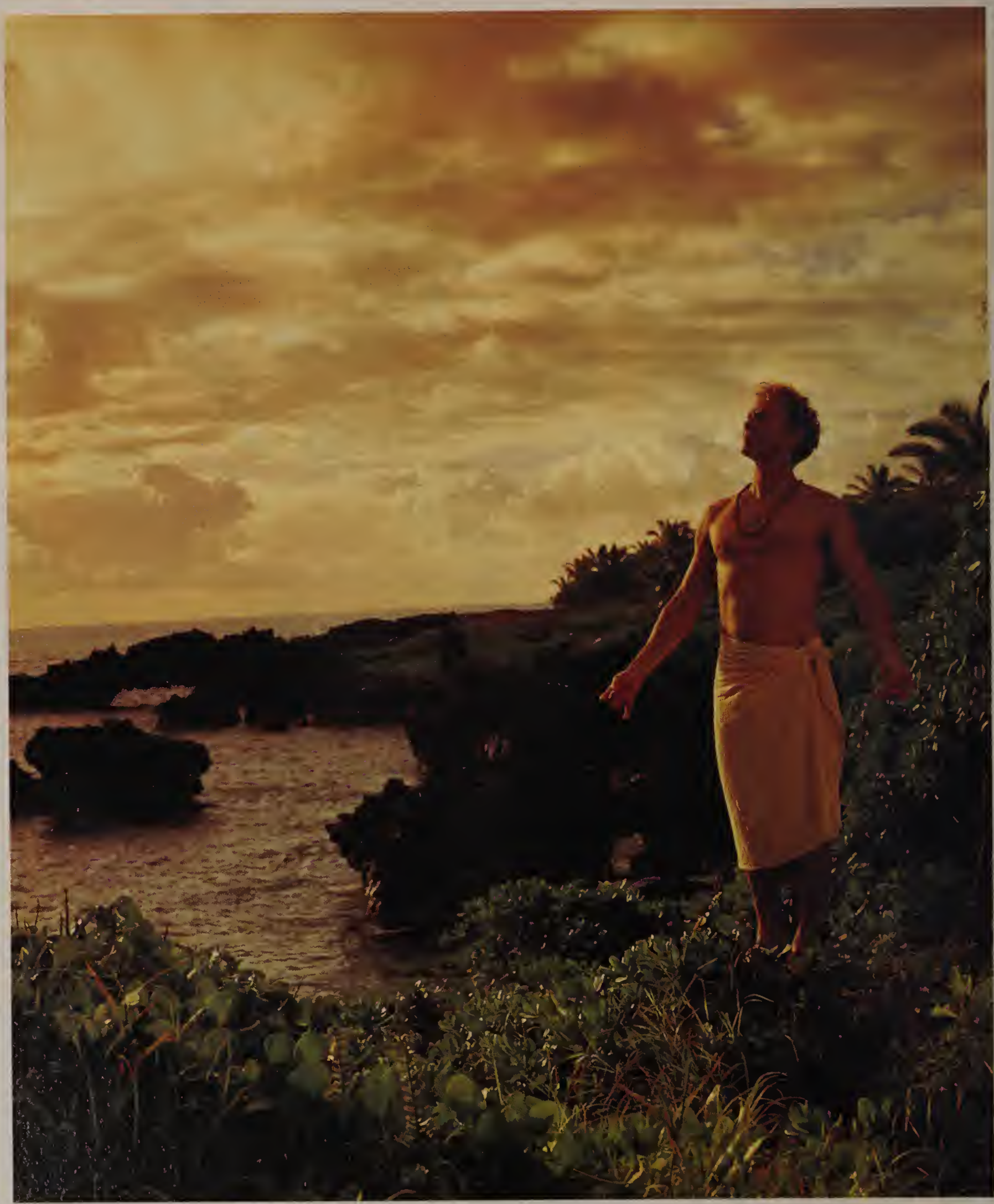
800-255-5660

Globalink™

YOUR GLOBAL LANGUAGE LINK

Circle 223 on reader service card

MANY PEOPLE STRIVE FOR PER
WOULD YOU SETTLE FOR PERF



FECT HARMONY IN THEIR LIVES.
ECT HARMONY IN YOUR MAC?

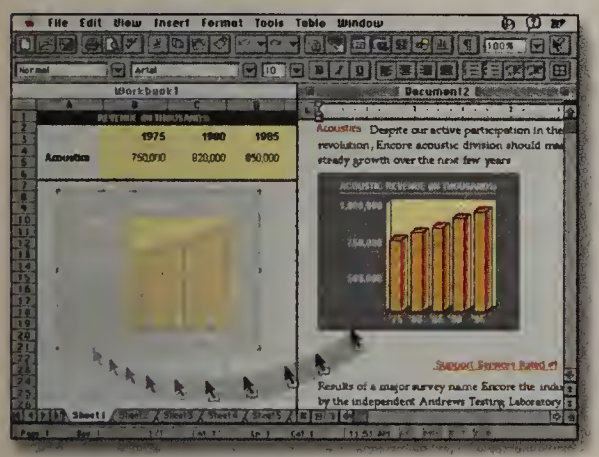
New Microsoft Office 4.2

Everything in your life may not always come together. But on your Macintosh®, it's another story. Because now there's a family of leading, full-featured programs for the Mac® that truly work together like one.

New Microsoft® Office 4.2.

Think of Office as programs that look alike. Programs that act alike. Programs that work so closely together, you'll feel like you're using just one.

An example? Let's say you want to change a sales chart that's part of a report to your boss. Go ahead. Simply click on your chart and



It's never been this easy to move data between programs. All you do is drag and drop.

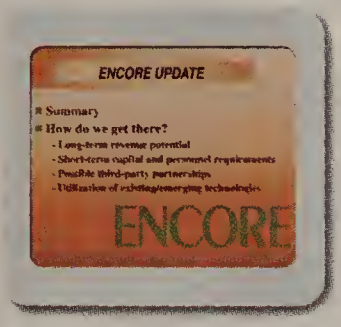
instantly your Microsoft Excel spreadsheet tools appear. Without ever leaving Microsoft Word.

Talk about being connected.

The fact is, the walls are down. You're now free to combine words, numbers and pictures with ease. Without leaving your document.

Better yet, no matter what you're working on, you're working smart. Thanks to IntelliSense™ technology,

One click turns your Word document into a PowerPoint presentation.



built-in intelligence that senses what you want to do, then helps you do it.

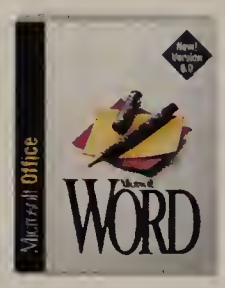
Behind Office, you'll find even more smarts: Microsoft's unlimited product support. It's available at no service charge.* Just call.

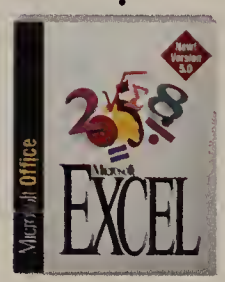
But first, call (800) 709-3787, Department YP4, to locate a retailer near you. They'll help you learn all about the new Microsoft Office Standard 4.2, in versions for both Macintosh and Power Macintosh™.

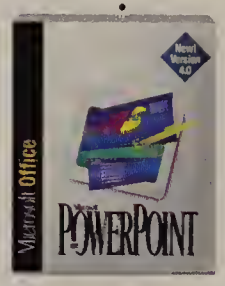
So give us a ring.

Then give your Macintosh something that most people spend a lifetime searching for.

New Microsoft Office 4.2 for Macintosh and Power Macintosh includes new versions of Microsoft Excel, Word, PowerPoint® and a Mail workstation license.







Microsoft Office

* Support for Microsoft Office is no-charge; however, normal telephone company charges apply. Microsoft support services are subject to Microsoft's then-current prices, terms, and conditions, and are subject to change without notice. © 1994 Microsoft Corp. All rights reserved. Microsoft Office Standard edition, shown here, includes: Microsoft Excel, Word, PowerPoint presentation graphics program and a Mail workstation license (server and software must be acquired separately). For info only: In the 50 United States, call (800) 709-3787, Dept. YP4. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers can reach Microsoft text telephone (TT/TDD) services at (800) 892-5234 in the U.S. or (905) 568-9641 in Canada. Microsoft and PowerPoint are registered trademarks and IntelliSense is a trademark of Microsoft Corp. Macintosh and Mac are registered trademarks and Power Macintosh is a trademark of Apple Computer, Inc.

You want to double productivity.

That's why we put MagicScan™ in every UC1260 scanner we make.

High resolution color scanning doesn't have to be a complicated process. Not with the UMAX 1200 dpi UC1260 color flatbed scanner on your side.

Because in addition to giving you exceptional image **QUALITY** at faster speeds than any scanner in its class, the UC1260 gives you unparalleled ease-of-use and functionality.

UC1260

Others

The secret? *MagicScan*. UMAX's intuitive plug-in scanning software enables the UC1260 to provide **FASTER,** easier and more versatile image manipulation than any other scanner manufacturer.

MagicScan offers a wide range of useful controls including **MULTIPLE/BATCH SCANNING,** allowing you to scan several images at once; a **DESCREEN** function that automatically removes screen patterns from halftone images; an **AUTO ADJUSTMENT** checkbox that lets you immediately preview any image changes through the highlight, shadow and gamma correction settings; and an **INVERT BUTTON,** which instantly creates a brilliant positive from a negative original—and vice versa. *It's the ultimate user interface.*

To add even greater **PRODUCTIVITY,** the UC1260 offers a maximum resolution of 9600 dpi* for smoother line art if you ever need it, a built-in SCSI II interface, Macintosh™ and Windows™ compatibility. And you can get the full version of PhotoShop™ and Kai's Power Tools™ with our Pro version and PhotoShop™ LE and OmniPage™ Direct™ with our LE version.

Also available—optional MagicMatch color correction

Call now for information on where you can buy it.

UMAX®
The Magic of Color™

1-800-769-7848

*Achieved through software interpolation ©1994 UMAX Technologies, Inc. 3353 Gateway Blvd., Fremont, CA 95438. 510-651-8883. Fax 510-651-8834. UMAX is a registered trademark of UMAX Data Systems, Inc. MagicScan and "The Magic of Color" are trademarks of UMAX Technologies Inc. Other company and product names are trademarks of their respective owners.

Circle 196 on reader service card

Letters

Macworld Online

I WOULD LIKE TO CONGRATULATE the staff of *Macworld* on the contents and organization of the August issue. The material on the Internet and the information highway was the most informative I have yet read. Many thanks.

Benis Frank
via America Online

YOUR SPECIAL ONLINE ISSUE DID A fairly good job of covering the bases that a beginning netter must consider, but it also confused a few issues. First, the Internet sidebar to Joanna Pearlstein's online-services guide did not fairly assess the University of Minnesota's TurboGopher application ("How to Ride the Internet"). The caption to the TurboGopher screen shot implies that TurboGopher is slower than other options. Since the legendary slowness of Mosaic (the World Wide Web browser) gets no mention, one could conclude that Mosaic is peppier than TurboGopher. But the reverse is true: Mosaic is nearly unusable over SLIP lines, while TurboGopher is about as fast as an America Online (non-SLIP) connection.

Second, Mel Beckman's article, "Pick the Right Communications Software," omitted Aladdin's emulator, SITcomm. Not only does this program integrate StuffIt file compression, but its utilization of AppleScript (instead of a proprietary scripting language) makes SITcomm one of the most talked about communication programs on the Net.

Michael Hon
via the Internet

WAKE UP, *MACWORLD!* I HAVE BEEN using America Online for almost two years (and have tried CompuServe, GEnie, Prodigy, and some BBSs), but I was blown away when I got a PPP account and started using Mosaic and a host of other Internet services. For $35 a month, I get complete Internet access (as opposed to the limited service offered by Delphi and others). By comparison, AOL would cost me, on average, at least $45 a month—and it's limited to 9600-bps access speed, is censored and centralized, and makes you pay by the minute.

Stephan Moskovic
via the Internet

It's true that using the Internet directly can be cheaper than subscribing to an online service, but direct access is also harder to configure and navigate—and it's not always faster.

We are awake, by the way; we just keep dozing off while waiting for Mosaic.—Ed.

YOU NEGLECTED TO MENTION THAT America Online makes certain users pay a surcharge for connecting. I live in Alaska and get charged 20 cents per minute for connecting.

John Boyarsky
via America Online

America Online charges a 20-cents-per-minute telecommunications surcharge for users who connect from outside the 48 contiguous United States, including Alaska, Hawaii, and Canada. According to America Online, the extra cost comes from the phone companies providing the access.—Ed.

ONE TOPIC I DID NOT SEE COVERED in your guide to online services was hours of operation. I've been a member of America Online, CompuServe, and Prodigy for years. AOL seems to shut down from 5 a.m. to 8 a.m. every day—a critical time for my E-mail and news-gathering activities. Prodigy seems to shut down around 1 a.m. to 4 a.m., which is no great inconvenience (but Prodigy is). CompuServe (my favorite) is always accessible.

Yvonne Oliver Bowers
Glastonbury, Connecticut

America Online's normally scheduled system maintenance times are Mondays, Wednesdays, and Fridays from 4 a.m. to 7 a.m. Eastern Standard Time (EST), and AOL reserves the right to take the system down any day of the week during those times. Prodigy's maintenance also occurs between 4 a.m. and 7 a.m. EST; the service may shut down during those times on any day of the week as well. A CompuServe representative said users aren't affected when that service undergoes maintenance.—Ed.

I HAD TO LAUGH AT YOUR COST chart's definition of "heavy use" as being 20 hours a month ("How Much Do Online Services Really Cost?"). In my first month using America Online, I was online for more than 40 hours; during my second month I topped 90 hours, sending my bill over $300. I've stabilized now at about 50 to 60 hours a month; I'm online every day for at least an hour, and some days more.

Steven Long
Felton, Delaware

Taligent Tangential

I WAS SURPRISED TO FIND NEXTSTEP and OpenStep completely ignored in "Taligent Rising" (*News*, August 1994). The irony, of course, is that NextStep does today what Taligent promises for tomorrow. In addition, OpenStep—one result of the alliance of Next and Sun

continues

WARD SCHUMAKER

IN CONTROL™ BEATS JUST GETTING ORGANIZED!

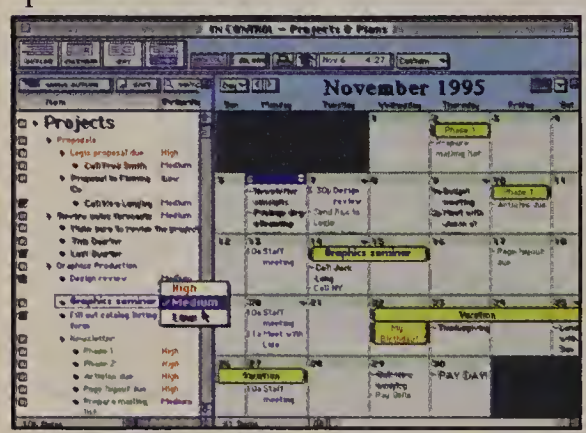
FEATURES	IN CONTROL	DATEBOOK™ PRO	NOW UP-TO-DATE™
Full-featured calendar	YES	YES	YES
Multi-column Action Outliner	YES	NO	NO
FileMaker® Pro lookup	YES	NO	NO
Lookup contacts from Touchbase® Pro, Now Contact™ and Dynodex®*	YES	Only Touchbase Pro	Only Now Contact
Unlimited number of outline columns	YES	NO	NO

"...one of the best long-range scheduling applications this side of project-management software."
–*MacWEEK*, July 11, 1994
◆◆◆◆

No other calendar program compares to getting the all new IN CONTROL. That's because IN CONTROL 3.0 is no ordinary calendar. No way!

It combines the ease of the flexible, multi-column Action Outliner™ with bigtime database power. It simply helps you plan smarter. *Only IN CONTROL works with FileMaker® Pro. (Look it up!)*

IN CONTROL 3.0 – the calendar to plan on!



IN CONTROL's multi-column Action Outliner and full-featured Calendar help you plan smarter.

Call Today 1-800-925-5615

MacUser ★★★★½ MACWORLD ★★★★

ATTAIN

Attain Corporation
48 Grove St., Somerville, MA 02144 (617) 776-1110
Fax: (617) 776-1626 Internet: Sales@Attain.com
*Applications support of AppleEvents vary

All products are trademarks or registered trademarks of their respective holders.
©1994 Attain Corporation.

CORRECTIONS

■ *The correct phone number for Fauve Software, maker of xRes, is 919/380-9933* (MacBulletin, *September 1994).*

■ *Microsoft Works 4.0 does not include copies of Bookshelf and Encarta* (At Work *news, September 1994).*

■ *The August 1994 review of The Cruncher incorrectly stated that the product requires operators for certain function types. In fact, The Cruncher uses standard formulas for calculations.*

■ *Regarding our July 1994 "Virus Killers" feature: MacTools scans StuffIt archives, but not Compact Pro archives. MacTools also supports automatic updating of virus signatures when a user logs on to the server and has a reporting feature so that the administrator can see which users have updated their antiviral software and which have not.*

After the article appeared, we discovered that our tests were done with slightly altered versions of the two Mosaic/FontFinder Trojan horses. The alterations render the two Trojan horses nondestructive (when launched, they crash the system, but do not affect data). MacTools failed to detect the altered versions, but it does detect the original versions of these Trojan horses.

Microsystems—will bring Next's object technology to other operating systems. Sun's Solaris and DEC's OSF/1 will both feature OpenStep layers within the next year. By the time Taligent reaches beta testing, NextStep will be running natively on Motorola, Intel, PA-RISC, and SPARC-based hardware. And OpenStep will be implemented on these same architectures, plus Alpha AXP and PowerPC.

Apple and IBM are foolish to ignore this proven technology. Instead, they would rather waste millions of dollars reinventing the wheel. Don't be misled by the Taligent propaganda: with an estimated one million seats installed by the time Taligent ships, NextStep and OpenStep are the future of platform-independent, object-oriented computing.

Robert A. Wyatt
Editor-Publisher, Next In Line
via the Internet

MessagePad Musings

DAN MUSE LAMENTED IN HIS REVIEW of the Newton MessagePad 110 that he, and most of the business world, do not have a reason to use Apple's PDA (*Reviews*, August 1994). How delighted I am as a public school teacher to be—for once, perhaps—on the cutting edge of a technology! I can wander the classroom and jot down observations of children's behavior, which I can then export and print for later discussion with a child's parents. Perhaps business types could gather some ideas by visiting schools that are using the Newton.

Mike Mitchell
via America Online

WHAT A TEDIOUSLY CHEAP WAY FOR Dan Muse to conclude his review of the Newton MessagePad 110. Has no one any imagination left? It's like hearing all over again the comments made about the first Macs.

When one understands how and why to use a Newton and ceases to impose one's own unreal wishes on it, things start to make sense. It's not for using with Word or FileMaker, and it's not an origination tool; rather it's an exceptional organizational and communications tool. I previously used a paper organizer, which now sits in a drawer.

Agreed, many improvements could be made, but Newton will oust competing approaches just as the Macintosh philosophy has ousted DOS. In a few years we will look upon conventional organizers with the same derision we now do command-line interfaces.

Joel M. Sciamma
via CompuServe

Hooray for First Class

KUDOS TO *MACWORLD* FOR GIVING FirstClass Client and FirstClass BBSs the praise they deserve (*The Desktop Critic*, August 1994). FirstClass offers the most Mac-like service available in a BBS, and I've never been on one I didn't like. In fact, I've given up using all other types of BBSs and now use FirstClass exclusively.

The only thing your article lacked was a mention of Tyrell Inc. in Rochester, New York (716/461-5157). Sysop 'JF Sebastian' and his crew have worked countless hours to give us tons of files, conferences, and (after we used it for a little while) friends.

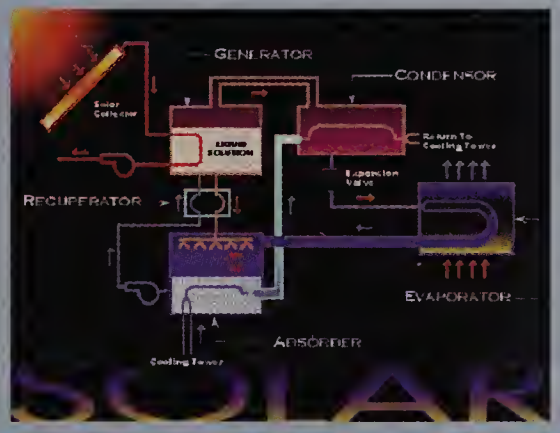
Marc Drumm
Penfield, New York

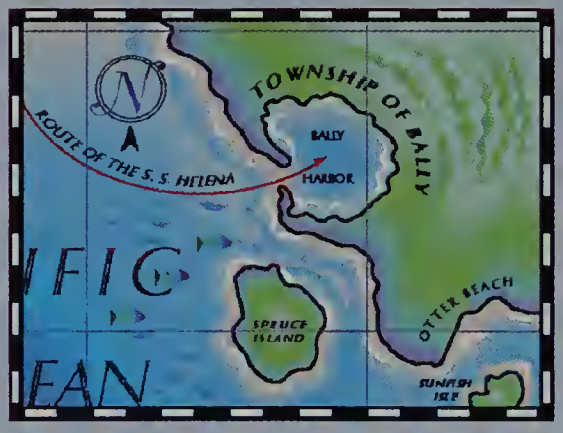
REGARDING THE ABILITY TO DOWNload material while simultaneously browsing through a FirstClass BBS's other areas, David Pogue writes, "Try *that* on America Online." Actually, I do just that on a regular basis, and many others do as well. I use an extension called

continues

EXPAND YOUR BUSINESS.
HARNESS THE SUN.
NAVIGATE AN OCEAN.
THEN BREAK FOR LUNCH.

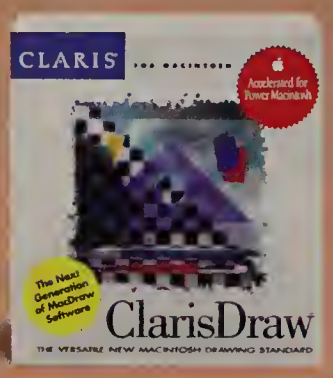
INTRODUCING CLARISDRAW.





With this dramatic new upgrade of the best-selling MacDraw® Pro, you're destined to create great things in a swift and painless fashion. Like maps, floor plans, flyers, free-form and technical drawings, to start. ClarisDraw™ brings you intelligent features like PointGuide™ and SmartConnectors,™ to save you time by reducing the number of steps needed to create graphics. There's also advanced text handling (like binding text to curves), sophisticated image editing and 24-bit color painting. The program translates popular industry-standard graphics formats. And it's accelerated for Apple's new Power Macintosh™ systems. With ClarisDraw, you'll produce professional-quality graphics in no time. (So you can take that extra hour for lunch.) For more info, call 1-800-544-8554, ext. 358.

THE NEW MACDRAW.



CLARIS®

Simply powerful software.™

©1994 Claris Corporation. All rights reserved. Claris, MacDraw and Apple are registered trademarks, ClarisDraw, ClarisDraw design, PointGuide, Simply Powerful Software, Smart Connector are trademarks of Claris Corp. Power Macintosh is a trademark of Apple Computer, Inc., used under license. In Canada please call 1-800-361-6075.

"The Best Mac Desk Ever."

NEW!

AS LOW AS $249

• Ergonomic
• Fully Adjustable
• Strong
• Guaranteed
• VAR Inquiries Welcome

agio™
BEAVERTON, OREGON

Free Catalog! 800.688.2446

| Phone 503. 690.1400 | FAX 503. 690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436 | ups

AOL Aid that allows background uploading and downloading.

Tripp Elliott
Knoxville, Tennessee

Ear Phone Solution

JIM HEID'S REVIEW OF JABRA'S EAR Phone Streamline AV mentioned that you could not hear the computer's other sounds, such as alert beeps and CD playthrough, unless you wear the Ear Phone or unplug it to reactivate the internal speaker (*Reviews*, July 1994).

Another option may be more viable. Purchase a stereo minisplitter from Radio Shack or an audio store, plug the Ear Phone into one of the splitter's jacks, and connect a pair of external stereo computer speakers into the other jack.

I like to have external speakers connected to my computer if I play audio CDs. Instead of groping behind my Mac for wires, I now simply take off the Ear Phone when I'm not using it and turn off (or lower the volume on) the external speakers when I hold a private call or secretly play my favorite game.

Andrew K. Jung
Victoria, British Columbia, Canada

There's got to be a better way
...PORT JUGGLER $99
Just set it & forget it

Attach any 4 serial devices including fax modems, MIDI, printers, even AppleTalk printers all to one Mac port and let Port Juggler deal with switching between them automatically.

momentum
call 808 263 0088
fax 808 263 0099

Circle 8 on reader service card

Levy Strikes Home

JUST RECEIVED YOUR AUGUST ISSUE IN the mail and read Steven Levy's article on electronic shopping (*The Iconoclast*). Levy hit the nail on the head with his remarks. Ninety-nine percent of online shopping efforts have missed the mark. Catalog shopping has been with us for over a hundred years—why hasn't it replaced retail shopping?

Places like the Compact Disc Connection and the Internet Shopping Network are pioneers that have a chance of being around in a few years, but Prodigy, CD-ROM catalogs, and the others don't have a chance until they "get it."

Phil Trubey
via the Internet

Letters should be sent to *Letters, Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically, to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), eWorld (Macworld), or AppleLink (Macworld1), or via Internet (letters@macworld.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. m

"Imagesetter-Quality Output From A Laser Printer Is Wishful Thinking."

FREE
Adobe Photoshop™ 3.0
with Each Printer Purchased
Offer Good Thru December 31, 1994

Adobe PostScript

Think Again. XANTÉ Unveils Its NEW LaserPress 1200

The Ultimate 1200 x 1200 dpi Halftone Machine.

Like sculptor Rodin, you know the tools you need to create exquisite works of art.

Envision, if you will, the perfect laser printer. One that won't compromise your halftones. Print grayscales which exceed the 100 lpi ceiling. Adjust gray levels of images to depict more detail. Wishful thinking? Not hardly. XANTÉ® turns dreams to reality with its new feature-rich *LaserPress 1200* with true Adobe PostScript. It's the ultimate high-resolution halftone machine.

Adobe™ PostScript™ Level 2 Printing You get security and complete reliability in print-intensive desktop environments, today and in the future.
High Resolution Print 1200 x 1200 dpi for superb fine-line and sharp gray-scale imaging.
Higher Line Screens Print halftones up to 120 lines per inch for photo-realistic imaging.
Halftone Calibration Technology Produce smooth, brilliant halftones by calibrating midtones of digital images, bringing out lost detail from printing dark photos or higher line screens.
Large Printing Format You can print full-bleed 11" x 17" documents with room for crop marks and registration marks.
High Speed Controller Extraordinary graphics performance with the 33 MHz AMD 29030 RISC processor. ***Simultaneous Interfacing*** Standard Ethernet®, LocalTalk®, parallel, and serial interfaces allow printing from Macintosh® and PC/compatibles concurrently. ***Automatic Emulation Switching*** The appropriate printer language is selected between Adobe PostScript and HP PCL® 5. HP-GL® emulation offers 1200 x 1200 dpi.

So, if you demand imagesetter-quality output, our LaserPress 1200 has it. Using any other printer in its class would be *unthinkable.*

Call XANTÉ today for more information and a FREE sample of output.

1-800-926-8839 (ext. 2112)
Dealers call ext. 2113
Fax 205-476-9421

XANTÉ
Innovations In Output

AT&T Capital Corporation

Optional on-site service provided by XANTÉ, in partnership with Olivetti North America
olivetti

MASTERCARD/VISA/AMEX/DISCOVER

©1994 XANTE Corporation. XANTE is a registered trademark of XANTE Corporation PostScript and Adobe are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. Other brands and product names are trademarks or registered trademarks of their respective holders
XANTÉ Corporation: 2559 Emogene St., Mobile, AL 36606, Post Office Box 16526, Mobile, AL 36616-0526 USA, Tel. 205-476-8189

Circle 112 on reader service card

The new AS/400.
The more sophisticated we made it, the simpler it became.

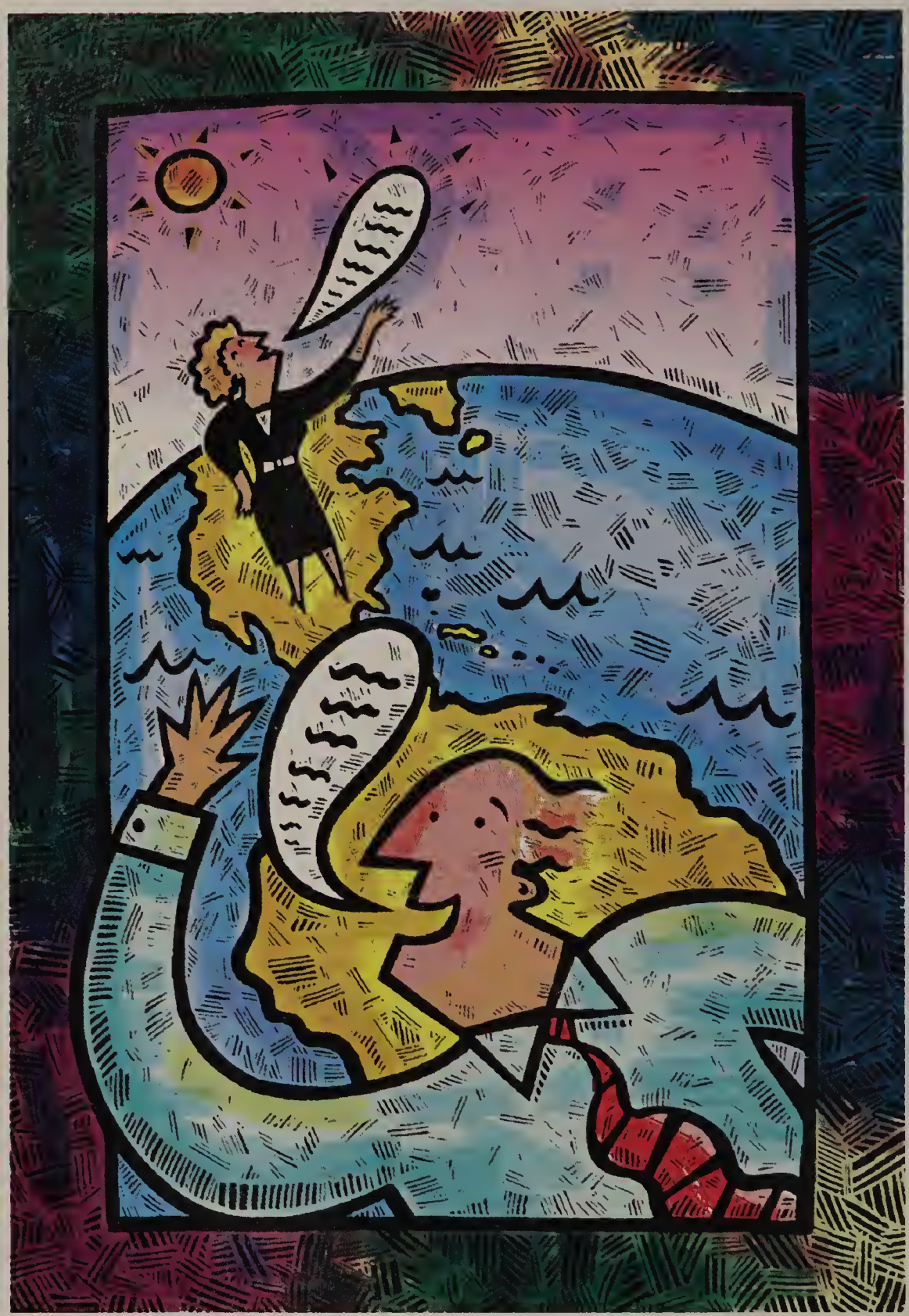
It's one thing to build new power into a business computer. It's another thing entirely to civilize that power and make it easy to live with. The new AS/400® Advanced Series does both. It's not just a new architecture, but an enormously flexible one. It incorporates the strengths of AS/400, UNIX® and PC environments, yet moves beyond them. Increases performance now and in the future, yet runs your current applications as easily as those yet to come. And it delivers a powerful new object-oriented environment that will make software development faster and more versatile than ever before. All of which explains the color we chose for this next generation in business computing. What could be more sophisticated, or simpler, than black? For additional information, call 1 800 IBM-6676, ext. 642 (in Canada, call 1 800 465-1234, ext. 340).

IBM and AS/400 are registered trademarks of International Business Machines Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. © 1994 IBM Corp.

The new AS/400 Advanced Series from IBM

Circle 179 on reader service card

EXPLORE the INTERNET!



FREE

DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet.** You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 4500 topics!

To help you find the information you want, you'll have access to powerful search utilities such as "Gopher," "Hytelnet" and "WAIS." If you aren't familiar with these terms, don't worry; DELPHI has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

FIVE HOUR FREE TRIAL!

Dial By Modem 1-800-365-4636, Press return until you get a prompt
At Username, enter JOINDELPHI. At Password, Enter MCWV94

Offer applies for new members only. A valid credit card is required for immediate access.
Other restrictions apply. Complete details are provided during the toll-free registration.

Attention Current Internet Users: See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

DELPHI
INTERNET

Questions? Call 1-800-695-4005.
Send e-mail to INFO@delphi.com

Circle 173 on reader service card

LATE-BREAKING NEWS

MacBulletin

Adobe-Aldus Update The merger between Adobe Systems and Aldus Corporation became final in early September. The combined companies will go by the name Adobe Systems and will shed some 200 to 400 employees in the process. To obtain FTC approval for the merger, the companies had to divest themselves of Aldus FreeHand. Altsys Corporation, which developed and updated FreeHand for Aldus, will regain control of the illustration program in January 1995. The FTC had maintained that without the FreeHand transfer, the merger could have led to higher prices and less innovation for professional illustration software.

The (Hand)Writing on the Wall Palm Computing, one of the first names in the PDA game, has announced its Graffiti handwriting-recognition software for the Newton. Graffiti requires users to learn a simplified alphabet made up of distinctive pen strokes; the company claims that experienced operators can scratch out 30 words per minute with a recognition rate close to 100 percent. The software will be available near the end of September for $79. Palm Computing, 415/949-0147.

Merger, Layoffs at Radius/SuperMac Radius and SuperMac officially became one company on August 31 after stockholder approval of the merger. The resulting company will be called Radius. Earlier, the companies had announced the elimination of 250 jobs, partly a result of contracting out production and partly due to duplication of effort.

Faster, Cheaper Wireless As cellular-communications carriers deploy TCP/IP-based Cellular Digital Packet Data (CDPD) service, PowerBook users will be able to make 19.2-Kbps wireless links to the office computer network—and pay only for actual transmissions, not for the entire duration of the hookup. At press time CDPD service was available in nine U.S. metropolitan areas; the cellular companies are working toward nationwide service. A CDPD modem is required. Sierra Wireless (604/231-1100) makes the $1195 PocketPlus, the first CDPD wireless modem for the Mac; the compact device also supports 14.4-Kbps V.32bis data and V.17 fax transmissions over circuit-switched cellular and telephone wires.

Big Stat for Mac SAS Institute, until now known to Macintosh users for the graphical exploratory data-analysis package JMP, is developing Mac versions of its entire line of traditional statistics software. The SAS line, one of the leading stat systems for minicomputers, includes about 20 modules. The first Mac SAS modules should be available in 1995. Pricing was not set at press time. SAS Institute, 919/677-8000.

Accelerator Market Slows Down Under pressure from Apple's low-cost, high-performance Macs, accelerator companies are falling by the wayside. Fusion Data Systems has shut its doors while it looks for a buyer for the company's assets, and at press time Harris Labs was not answering its phones. Rival firm Brainstorm Technologies said it will give free technical support to owners of Fusion's TokaMac or Harris's Performer accelerators, as well as offer a $99 upgrade to Brainstorm's own line of Plus and SE accelerators. Brainstorm, 415/964-2131.

Novell Cuts Jobs Novell announced plans to cut 1750 jobs within its organization, newly merged with WordPerfect Corporation. At press time the company would not specify which departments will be affected, but a spokesperson said the move will eliminate duplication of effort. The leaner company plans to employ about 8250 people by the end of January 1995. m

News

EDITED BY TOM MORAN

IN THIS ISSUE

p. 36 Quad-Speed CD-ROM Drives **p. 37** HP's Color Ink-Jets **p. 37** Apple's 3-D Plans

p. 38 Multimedia Utilities **p. 38** FWB Revises ToolKit

p. 39 Now Utilities 5.0 **p. 39** HP's First Color Laser **p. 39** DynaTek Drives

Spindler Says Clones on the Way

After a year on the job and with the challenge and opportunity presented by the upcoming new Windows version, Apple's president and CEO, Michael Spindler, recently outlined Apple's goals and directions. With Spindler were Apple's division heads, who detailed their product areas' plans. Apple has encapsulated its strategy in the slogan "stand out and fit in," meaning Apple intends to exploit unique Mac capabilities while promoting interoperability with PCs and other computers. That's not a new goal for the company, but Apple finally seems poised to shift from talk to action.

WILL CROCKER

Clones Are Coming

Perhaps the most radical action will be licensing the Macintosh OS to other vendors, who can then develop Macintosh-compatible computers. Apple's vice president for licensing, Don Strickland, said on September 7 that at least two clone licenses have already been signed, but he declined to name the licensees. Industry rumors name Motorola in the United States, Acer in Taiwan, Vobis in Germany, and Olivetti in Italy.

Strickland added that Apple will not restrict Mac OS licensees to narrow geographic areas or markets; they will be free to sell anywhere. But Apple expects that near-term clones will be sold only where they might enjoy a competitive edge—in regions and segments where Macintosh sales are weak, such as large U.S. businesses.

Strickland confirmed that Apple will not license the Mac OS anytime soon to the top non-Mac PC makers, which include Compaq, Packard Bell, IBM, Gateway 2000, and Dell. Instead, Apple has targeted midsize computer makers, ranking between 8th and 20th in worldwide sales.

Strickland said that licensees will set the timing of announcements. He estimated that two to three announcements will come this year, and another three or four by early summer, 1995. Apple expects to expend considerable resources supporting clone vendors, and will therefore limit their number to about six in the first year.

Mac clones will not be able to use the Macintosh name, the traditional Mac logo at start-up, nor an Apple for the DA menu.

Spindler said earlier that Apple insisted on restricting licenses to companies that spend money on research and development, to ensure that the Mac clone market will not offer just me-too machines.

Strickland explained that the first generation of Mac clones will be "Power Mac look-alikes," mimicking the current Power Mac architecture within PC boxes. Around the first quarter of 1996, he added, Mac clones will emerge that will feature stronger compatibility with other operating systems. Apple hopes that these "Windows-environment" Mac clones will increase the Mac OS market share within large businesses that have standardized on Windows computers but want to integrate Mac capabilities for certain departments.

Meanwhile, Apple would probably keep the PowerBook market; people would stick with true Apple PowerBooks because the integration issues are more complex.

The Mac now holds about 10 percent of the worldwide personal computer market, and Apple hopes to grow its Apple-branded Mac share to about 13 percent in the next three years, according to Strickland. He expects clone sales to add an additional 3 to 4 percent during that period, for a total Mac OS market share of 16 to 17 percent. Strickland said that any convergence between IBM's PowerPC Reference Platform (PREP) specification and the Power Mac would not occur soon. Such convergence could allow IBM PowerPC computers to run the Mac OS with no special modification (see "Glimpse of the Future," *Power Mac News*, September 1994). "It would take us about two years to port [the Mac OS] to PREP," Strickland noted. "It would require us to literally turn our software developer base over. We can't do that in the next two to three years."

Apple's new logo for the Mac Operating System will appear on clones at start-up and on boxes of Mac-compatible products.

Apple is pressing its suppliers to make Apple chips (ASICs and the like) available to clone makers at the same prices Apple pays. But such Apple-specific components would not be sold on the open market, Strickland added.

New Mac OS A year ago, Apple officials downplayed the similarities between Microsoft's upcoming Windows interface (Chicago) and the Mac's current interface. But now Apple has changed its tune. "Interfaces are too complicated," Spindler said, and he promised that Apple will beat today's other interfaces in offering a simple, compelling interface that will present users with a stark choice, as happened a decade ago when the first Mac challenged the then-dominant DOS interface. Spindler said the AppleSoft division will create this interface. That's a change in AppleSoft's original mission to develop unique apps for the Mac that would differentiate Macs from Windows PCs. That mission now falls to Apple's Claris subsidiary.

The new Mac OS will likely be released in early 1996. Code-named Copland, it will provide some of OS/2's and Chicago's technical capabilities, such as preemptive multitasking, that make system crashes less likely and allow better interoperability among programs in such schemes as OpenDoc and OLE. (OpenDoc will be made part of the Copland OS, although a System 7 version will ship in early 1995. Apple is banking on OpenDoc both to make multiplatform development easier and to hobble Microsoft. See "OpenDoc and OLE 2.0," elsewhere in this issue.) Apple would provide no interface details of Copland.

Users of Apple's now-defunct A/UX variant of Unix will have to wait until sometime in the first half of 1995 for the replacement version of Unix, called PowerOpen, that is based on IBM's recently completed AIX 4.1 Unix variant. PowerOpen will run only on Power Macs with a PCI bus, which should ship around the same time.

Video Future Spindler stressed the need to integrate video into the Mac. Separately, next-generation Power Mac product manager David Limp said the PCI-based Power Macs expected in spring 1995 would include AV technology and use Apple's DAV (Digital Audio Video) bus in addition to the PCI bus to provide high-quality video-capture, editing, and playback.

Spindler said that MPEG compression would be a key component of future AV technology, since it was a requirement of entertainment giants like Time Warner to use movies and other motion video in CD-ROMs and other media. In fact, Apple will ship an MPEG playback board for the Quadra 630 in time for the Christmas selling season, according to Carlos Montalvo, product-line manager for entry-level systems.

Apple officials pointed to the new Quadra 630 as an example of the video Mac of the future, one where even inexpensive Macs will deliver audiovisual processing power. Spindler pointed out that "multimedia is a key driving criterion" for the small-office and home-office markets, the fastest growing markets in the PC and Mac industries.

Spindler also explained Apple's interest in set-top boxes, devices under development by several companies to manage data, such as interac-

continues

In Brief

Online Ethics for Profit

Symantec has announced that it will give free copies of The Norton Utilities and Norton AntiVirus to the first 500 BBS sysops who post an approved code of ethics on their systems so that all normal users will see it in the normal course of use. Also, the sysop must agree that an approved code will remain as part of the sign-on process for at least four months. Contact the National Computer Ethics and Responsibilities Campaign on CompuServe for more information (GO CETHICS), or call 310/459-9565.

Storage Price Cuts

APS has cut prices by 5 percent to 35 percent on its entire SCSI storage line, including internal and external hard drives, removable hard drives, tape drives, and CD-ROM drives. Leading the price drop is APS's IBM 1GB internal hard drive, now selling for $699 ($799 external). 816/483-1600.

FolderBolt Pro

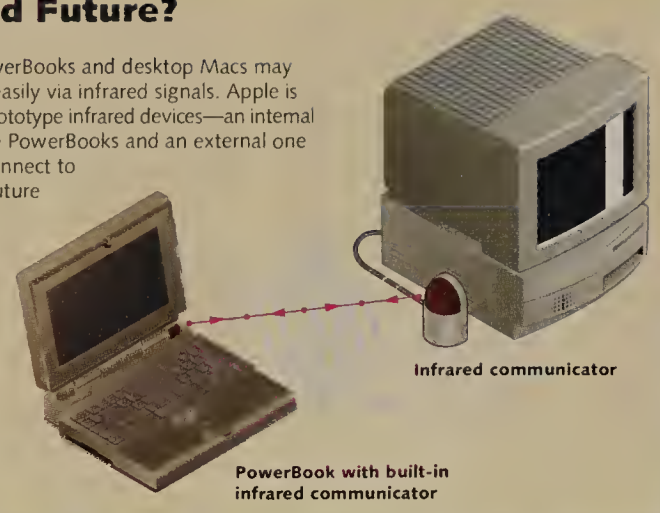
Kent Marsh plans to ship FolderBolt Pro for all current Macs by September at an expected $75 street price. The software supports using a password over a network to lock and unlock folders using personal file sharing or AppleShare. The program can also encrypt a file or folder while locking it. Upgrades from the 680X0 version 1.02c are free for copies purchased after January 1; other customers pay $39. 713/522-5625.

VideoShop 3.0

Avid Technology has released VideoShop 3.0, a video-editing program that includes Apple's new QuickTime 2.0. VideoShop 3.0 supports MIDI editing, which can substantially reduce the disk space required to store sound. Available now in a version for both 680X0 and PowerPC-based Macs, the program lists for $395; upgrades are $79. 508/640-3032.

Infrared Future?

Someday PowerBooks and desktop Macs may transfer files easily via infrared signals. Apple is working on prototype infrared devices—an internal one for future PowerBooks and an external one that would connect to current and future desktop Macs.



Artist's concept

tive TV. (Apple is involved in a set-top experiment in England.) While set-top boxes will not be profitable, Spindler sees them as an opportunity to sell more Macs. "A set-top is a Mac without the keyboard, monitor, and mouse. [After people buy a set-top box], we'll sell them these components, which have higher margins," he said.

PC Interoperability Elevated to a business strategy from a hotly debated experiment, DOS compatibility has become part of Apple's long-term strategy. The DOS Compatible board that Apple shipped for a few months this past spring sold well beyond expectations; plus early numbers show that nearly a third of Power Mac owners run Insignia Solutions' SoftWindows emulation software, according to Ian Diery, vice president of Apple's Personal Computer Division. Apple has shown a prototype PC coprocessor board for Power Macs that uses a faster processor and adds support for networking and SoundBlaster audio (which an Apple product manager conceded offers higher quality than standard Mac audio) for games and CD-ROMs.

Apple also promised that SoftWindows would be revised, perhaps by late December, to support Windows 3.1's 386 Enhanced Mode, which more and more Windows programs require and which will be needed to take advantage of Chicago. Spindler said that Enhanced Mode–compatible SoftWindows would be "critical" to the success of Mac clones, which users would want to be compatible with both the Mac and Windows.

Some future PowerPC-based PowerBooks will also include SoftWindows, while others may include a PC coprocessor card.

Connectivity Highlighted Scheduled for release before the end of the year is the long-awaited Telephony Tool extension, the component AV Macs need to handle voice mail and other voice communications along with faxing and E-mail. Spindler spoke of "the need to mask the complexity of E-mail, voice mail, and telecommunications," and he suggested this would be a main area of emphasis for the Mac.

Similarly, cross-platform networking was an important concern of Apple's, but one that Apple would rely on outside standards to supply. For example, Apple Business Systems vice president Jim Groff previewed native Mac Novell NetWare 4.1 server and client software running on a cross-platform network, and Groff said the Mac versions would ship shortly after Novell released 4.1 for PCs, scheduled for late this year or early next year. With System 7.5, Apple is also bundling MacTCP, which lets Macs connect to most Unix-based networks.

Relying on third-party technologies for enterprise-wide networking will let Apple focus on what Spindler called ad hocracy networks—those where users come and go and manage themselves, the hallmark of a department LocalTalk or ARA (Apple Remote Access) setup. AppleSearch 1.5 is due this fall, and Apple is working on ARA 3.0.

As promised a year ago, Apple is porting its networking software to PCs and planning to deliver Windows versions of its network software by the end of 1994. First out will be AppleShare and AppleTalk for Windows. Later will come AppleSearch, ARA, and PowerShare. Apple previously announced that it and Microsoft had agreed that Apple's PowerShare collaboration services would support Microsoft's MAPI (Messaging Application Program Interface) standard in a future release.

Apple will focus on Windows 3.1 rather than Chicago, according to Groff. Groff could not say whether Apple's ARA would work with Chicago's built-in remote-access software.

PowerBook Promises Rather than revise the PowerBook line every few months, as it has seemed to do in the last year, Apple will now develop notebooks with year-long life spans, according to Brodie Keast, vice president of the PowerBook division. When PowerPC-based PowerBooks ship in the first half of 1995, Apple will also provide PowerPC upgrades for all PowerBook 200– and 500– series notebooks. Till

TREND

Quad-Speed CD-ROM Drives

A HOST OF MECHANISMS

The CD-ROM drive market is a lot like New England weather—if you don't like it, you don't have to wait long before it changes. Quadruple-speed (600-KBps data-transfer rate) drives are starting to arrive on the scene; and NEC, Toshiba, and Plextor are leading the charge.

TOM GIBSON

The Toshiba TXM-3501E (top) and Plextor's 4Plex are part of the new generation of quad-speed CD-ROM drives.

NEC announced its MultiSpin 4X Pro earlier this year and is now shipping the drive in quantity. The $995 drive features a 180ms average access time and a 256K cache. Plextor, the next to announce, sells both an external ($549) and a half-height, internal ($649) configuration. Plextor's drive, the 4Plex, has a larger cache (1MB), but a slower average access time (220ms). Toshiba's XM-3501B (internal, $470) and TXM-3501E (external, $600) drives sport a 256K cache and an average access time of 155ms.

As with the step from single- to double-speed drives, the 4X performance increase comes with some caveats. Speed increases are always useful for anyone who searches on and retrieves data from CD-ROMs; but if you're playing QuickTime movies, a 4X drive won't make that much difference, as most developers have optimized their content for playback on 150-KBps (single-speed) or more recently, 300-KBps (double-speed) drives. NEC, 708/860-9500; Plextor, 408/980-1838; Toshiba, 714/457-0777.—CAMERON CROTTY

then, the only change in the PowerBook lineup is the phasing out of the 230.

Future PowerBooks will include PCMCIA slots, a popular technology on PC notebooks that Keast admitted Apple had "missed out on." On PCs, PCMCIA cards are used to add everything from modems and hard drives to network support. Since Mac notebooks already include these capabilities, Keast said he expects PCMCIA to be used primarily to add wireless communications to PowerBooks. He also expects future Duos to have more built-in connectivity options and for Apple to simplify its docking options. One option is to revise the Mac OS to *hot-swap* cards and docking stations, which means users could insert and remove expansion options while the PowerBook was running. Chicago will add this to PC notebooks. Because as many as 15 percent of PowerBook owners use PCs, Apple is investigating whether to support Intel and Microsoft's Plug and Play specification, which should allow hot-swapping and automatic configuration of peripherals, so PowerBooks could connect directly to PCs.

Because about three-quarters of PowerBook owners also have a desktop computer, desktop connectivity is important to Apple. One option that Keast demonstrated in prototype form was infrared communication. He showed a PowerBook exchanging files with a desktop Mac that had an infrared pod plugged into a slot. Infrared technology, already available on the Newton MessagePad, might reduce the need for multiple ports and floppies on Duos while providing sufficient data exchange.—GALEN GRUMAN with CHARLES PILLER

MARK JOHANN

Hewlett-Packard's DeskWriter 540 converts from monochrome to color printing by swapping an ink cartridge.

HP Adds Ink-Jets

A SPRAY OF COLOR

Aiming to make it simpler to choose an inexpensive desktop printer for the home or small office, Hewlett-Packard has announced the DeskWriter 540, an ink-jet model that replaces two of the company's most popular ink-jet printers: the gray-scale DeskWriter 520 and the color DeskWriter 520C. With the introduction of the 540, HP will offer color as either an option or a standard feature on its entire DeskJet line. Users will easily be able to remove the black-ink cartridge that comes with the DeskWriter 540 and snap in an optional three-color cartridge. This will let users switch, for instance, from printing ordinary black-and-white business letters to getting out a color chart or party invitation. Hewlett-Packard says it sold two million color DeskJet/DeskWriter (the PC/Mac versions) printers in 1992, and it wanted to make color capability of some kind part of every ink-jet printer it sells. The one drawback to the three-color approach is that the printer combines cyan, magenta, and yellow to produce what's called *process black*); the resulting black is not as pure and dense as black ink, and the process lays down more ink in the black areas, making the paper cockle a bit more until completely dry.

Nonetheless, the prospect of buying a $365 printer that you can later upgrade to color for $49 is appealing. The first color cartridge is more expensive because it comes with a humidor, a case that keeps the ink from drying out. Later cartridges without the humidor are less expensive.

The DeskWriter 540 has 600-by-300-dpi resolution with HP's Resolution Enhancement Technology (RET). The 540 achieves 600-dpi horizontal resolution without performance cost because the print head now prints in both directions as it travels across the page. HP also improved the 540's paper handling: it accepts paper as small as 4 inches by 6 inches, and it takes stacks of envelopes. It prints 3 ppm for black and about 0.5 ppm in color. The printer also offers a speedier EconoFast mode with lower print quality. HP said that it has made its inks more water-fast (an issue for some, especially those who print envelopes) and that they are nontoxic, for home use.

Hewlett-Packard expected to begin shipping the DeskWriter 540 on October 6. It includes 512K of RAM, a faster processor, and 33 TrueType fonts. HP, 800/752-0900.—T.M.

Apple Plans 3-D Chip

FASTER RENDERING FOR FUTURE MACS

Real-time rendering of 3-D images as you navigate and change perspective currently requires DSP chips to work smoothly, but Apple is working to miniaturize what now takes two NuBus cards into one chip that could be used on a motherboard or video card. Apple plans to

continues

In Brief

Ikegami's 21-inch Trinitron Clone

Ikegami Electronics USA plans to ship in September the CT-21B, a $2495 21-inch color monitor. The display uses Mitsubishi's Trinitron-clone technology with a 0.30mm aperture grille, and requires a $19.95 Mac cable adapter. Unique to the monitor are Apple-style 8-pin DIN serial ports, Apple ADB ports for use with special cables, and a set of front-panel dials that let you change the on-screen resolution. 619/280-0099.

OrangePC for Chicago

Orange Micro expects its existing PC coprocessor cards to support the forthcoming Windows 4.0 (known by its code name Chicago). A free software upgrade will likely be necessary, a spokesperson said. The OrangePC 200 Series coprocessor cards add a PC motherboard into any Mac with a 12-inch NuBus slot (all Macs with NuBus but the Quadra 610, Centris 610, and Power Mac 6100). Orange Micro may also add support for IBM's OS/2 2.1 operating system. 714/779-2772

Online Software

America Online, CompuServe, and Prodigy have upgraded their client software for Macintosh users. Expected to be available now, America Online 2.5 adds a redesigned interface, reorganized content, and the ability to view graphic images online. Due by October 1, CompuServe Information Manager 2.4 also includes reorganized content and the beginnings of a more graphical interface. Prodigy 2.0 has Mac-like menus at the top of the screen, and the software lets Macintosh users cut and paste and participate in live chats. This year Prodigy expects to ship the Mac version of the mail manager, which can receive Internet mail. Members can download the new software from the services when the new versions are available.

deliver "aggressive 3-D next year," according to president and CEO Michael Spindler. Apple has quietly demonstrated a 3-D interface that makes manipulating 3-D elements straightforward, and the company is developing a chip (for use in future motherboards or add-on cards) that would handle the intensive computations needed for 3-D work.

The company characterizes its demonstrations as research, not a commitment to a product. One of the driving forces behind the research is Apple's Advanced Technology Group, which has been at work on the 3-D interface, which uses shadows, sound, and visual clues to make manipulating and navigating 3-D objects easier.
—GALEN GRUMAN

Motion Works Multimedia Utilities

SIX-PACK OF SOFTWARE

Everyone needs tools to work with, and for anyone whose medium is multimedia, Motion Works has come out with a six-pack of software utilities designed for editing graphics, sound, and QuickTime movies.

The heart of the utility package is CameraMan 2.0, which records screen activity, including cursor motion and dialog boxes, to a QuickTime movie. QuickEdit is a multitrack version of the CameraMan movie editor; with it, users can add sound, titles, graphics, and additional video clips to their movies. For greater alterations, the Motion Works package includes QuickMorph, a mesh-based morphing utility; MotionPaint, a 24-bit cel-animation tool that supports overlaying and onion-skinning; and SoundMate, software that records, edits, and adds effects to 8- and 16-bit sound. Finally, with the MovieClick utility, users can add hot spots to their movies; hot spots execute various tasks when clicked, including going to a specific movie frame, playing a new movie, stopping playback, or playing a sound. The Multimedia Utilities are currently available for $299 from Motion Works, 415/541-9333.—CAMERON CROTTY

FWB Revs ToolKit Line

SPEEDING UP DRIVES

Aiming to make existing drives faster, FWB has come out with new versions of its Hard Disk ToolKit (now version 1.6), Hard Disk ToolKit Personal Edition (also 1.6), and CD-ROM ToolKit 1.1. The new CD-ROM ToolKit supports CD+G, which means you can view pictures that some recording companies are putting on audio CDs (including Fleetwood Mac's *Behind the Mask*).

Your CD-ROM drive also needs to support the CD+G format, and according to FWB, there are currently four or five models that do, including Apple's. You can tell if an audio CD has graphics on it by looking at the disc for the letters *CD+G* imprinted on the inner ring.

OK, fun stuff aside, CD-ROM ToolKit 1.1 also lets you extract a digital copy of music or other audio from a disc. That means the music does not have to be converted from digital to analog and back to digital to bring it into your AV Mac. Instead of going over an analog cable, the audio data goes through a SCSI cable in digital form. So you can get much higher quality playback without the data loss that would normally happen during the two conversions. Again, your drive must support audio extraction. Approximately 14 existing CD-ROM drives do, according to FWB, including the current Apple double-speed model and—surprise—the FWB HammerCD4X, a recently introduced quadruple-speed CD-ROM drive that uses a new Plextor mechanism (see "Quad-Speed CD-ROM Drives," in this section).

SCOTT PETERSON

FWB's HammerCD4X uses the Plextor quad-speed CD-ROM drive mechanism.

Not everyone needs the very high speed of the HammerCD4X, which carries a somewhat hefty list price of $1099. For those who do need a very fast source of data—for instance, to pour into a recordable CD-ROM drive without causing data hiccups—the extra price could easily be worth it. The drive also supports High Speed Multisession CD mounting and comes with a 1MB cache, the CD-ROM ToolKit 1.1 software, and cables. FWB sells CD-ROM ToolKit 1.1 separately for $79, or $29 for an upgrade from a previous version. The toolkit software also supports Apple's recently introduced QuickTime 2.0.

The company has begun shipping HardDrive ToolKit 1.6, the latest version of its disk-management utility software, which supports the larger 4GB maximum volume size permitted by System 7.5. Unfortunately, despite the recent appearance of more high-capacity drives and arrays, the maximum volume size will not go to one terabyte (1000GB) until Apple's next system software revision, which will not be out for quite a while.

Version 1.6 expands the formatting and other capabilities of earlier versions, and it works on more different brands and types of drives according to FWB. It lists for $199, and upgrades are $39. FWB also updated its less complex incarnation of the software, HardDrive ToolKit Personal Edition, to version 1.6. Personal Edition lists for $79, and updates are $29. These latter two products and the latest CD-ROM ToolKit also include native Power Mac versions. FWB, 415/474-8055.—T.M.

THE AMCOEX INDEX OF USED MAC PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
PowerBook 100/4MB/20MB	$600	–$50
PowerBook 140/4MB/40MB	$825	–$25
PowerBook 180/4MB/80MB	$1650	–$25
PowerBook Duo 230/4MB/80MB	$975	–$125
Mac Classic/2MB/40MB	$375	–$25
Mac SE/30/2MB/40MB	$600	$0
Mac LC II/4MB/40MB	$525	$0
Mac IIsi/3MB/40MB	$575	+$75
Mac IIci/4MB/80MB	$900	–$50
Mac IIfx/4MB/80MB	$1050	+$25
Centris 650/8MB/230MB	$1200	–$75
Quadra 900/8MB/160MB	$2100	+$100

Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during the week of August 20. Configurations include keyboard and exclude monitor and display board for noncompact models.

Now Charges Up Utilities

REVISES, ADDS COMPONENTS

Version 5.0 of Now Software's eponymous utilities package features two all-new components—Now QuickFiler and Now FolderMenus—along with several improvements to the bundle's regular lincup. Now QuickFiler complements the Mac Finder, combining enhanced file searching (including document contents) with compression technology borrowed from Now Compress. Portions of Now QuickFiler are written in native Power Mac code, as are pieces of Now WYSIWYG Menus and NowScrapbook.

With Now FolderMenus, when you click on a volume or folder's desktop icon, a hierarchical menu of the contents pops up, much like Inline Design's PopupFolder. Another work-saver is Now Startup Manager's new conflict-isolation feature. Similar to Casady & Greene's Conflict Catcher II, Now Startup Manager leads you through a test sequence, automatically activating and deactivating extensions until it finds the offending one.

Some enhancements to Now Utilities rely on parts of Apple's new System 7.5—with 7.5 and Now Menus installed, users can create custom, draggable menus in the menu bar for accessing files, folders, and applications. Custom menus support drag and drop: users can drag files from the desktop up to the customizable menus and drop them on compatible applications—launching both the file and the application. Also, Now Scrapbook and Now Profile are compatible with Apple's PowerTalk. Now Utilities 5.0 is currently available for an estimated street price of $89.95; upgrades are available for $39.95. Now Software, 503/274-2800.
—CAMERON CROTTY

BUGS & TURKEYS

Running Finale 3.01 with Virex 5.0 installed will freeze your Mac. Coda Music Software, the maker of Finale, has no fix planned; furthermore, the company says it can't be responsible for compatibility problems with non-Apple software in a user's System Folder. Now that's proprietary.

Prometheus's MaxFax 3.3.2, which comes with the company's fax modems, doesn't always work with 32-bit addressing active. If 32-bit addressing is active, some applications, including Microsoft Excel, may crash when users print or save. Prometheus hopes the problem will be fixed in version 3.5.1, expected by August.

Users of the Apple Multiple Scan 17 Display have reported problems getting resolutions other than 640 by 480 to appear on the display when used with a Quadra 605 or 650 equipped with 1MB of VRAM. Apple confirmed the bug, saying the problem lies with the Display Enabler 1.0. The company hopes to fix the problem in the next version of the enabler.

Apple boasts that its eWorld Apple Customer Center is "your direct connection to Apple Computer." But our determined digging unearthed only one response by Apple to the questions posted in its forum during a two-week period. And that response was to our question asking if Apple reads its boards. Apple says it is "continuing to work on setting up a permanent presence" on its own online service.

Macworld will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld*.

HP's First Color Laser

OFFICE COLOR SPREADING

It wouldn't be hard to envision Hewlett-Packard's motto as "Anything that prints." The HP Color LaserJet is the company's entry into the burgeoning office color-laser market recently occupied by QMS and Xerox. The Color LaserJet prints 300-dpi black-and-white images on plain paper up to 11 by 17 inches in size—color printing is limited to letter or A4-size paper. Print times range from roughly 2 ppm for four-color documents, through 4 to 5 ppm for black pages with a single highlight color, up to 10 ppm for black-only pages. The HP Color LaserJet ships with a parallel interface, but Macintosh users will likely want to add a JetDirect card for 10BaseT, Token Ring or Ethernet, and LocalTalk support ($369, $619, $429). PostScript Level 2 is also available as an option—in its standard configuration, the printer supports HP PCL 5. With the PostScript SIMM installed, the printer holds up to 56MB of RAM (ships with 8MB), and the PostScript upgrade adds 35 Type 1 fonts to the printer's 10 TrueType fonts and 35 Intellifont (Windows) typefaces. The HP Color LaserJet is currently available for $7295. HP, 800/752-0900.
—CAMERON CROTTY

DynaTek Storage

A MULTITUDE OF DRIVES

Another company has entered the storage fray: DynaTek, out of Nova Scotia, is offering a line of SCSI storage products. The company carries DAT tape drives, ranging from 2GB to 8GB ($1429 to $1714 standard retail price), and a full complement of SyQuest removable drives ($570 to $714). DynaTek also sells 128MB, 230MB, and 1.3GB optical drives, as well as double-speed CD-ROM drives based on Toshiba mechanisms ($464). Finally, DynaTek carries Quantum, SCSI-2–compatible hard drives ranging from 170MB to 1GB ($429 to $1257). All hard disk, optical, and CD-ROM drives ship with the company's ComPass Pro 3.0 SCSI-formatting and -utility software, and the DAT drives come with Dantz's Retrospect Remote backup software. DynaTek received an excellent tech-support rating in a recent article testing hard drive mechanisms between 120MB and 540MB (see "Mainstream Storage," March 1994). DynaTek, 902/832-3000.—CAMERON CROTTY

ROBERT PERRY

DynaTek's RMD200, a 200MB SyQuest removable cartridge drive (left); and ROS230, a 230MB erasable optical drive.

THE NEW RAVEN PRO.
BECAUSE MAN WAS
MEANT TO FLY.

When it comes to performance, the sky should be the limit—not your equipment. Introducing the Raven Pro disk array, our next-generation flying machine. Now you can open a 480 MB Photoshop file with lightning speed. Transfer dailies without losing a single frame. Gain access to mirrored business-critical data in less than 8 ms or mix and match RAID levels and partitions to meet your specific needs. With 17.2 MB/sec throughput and up to 52 GB on-line capacity, they're four times faster and have 104 times the capacity of the native 500 MB drive you're probably using now. To find out what Raven Pro can do for your company's throughput, call 1-800-800-DISK. Then let your imagination and productivity take flight.

Raven Pro

Raven's flexible utility program allows you to optimize drive caching and each partition's parameters, including location on disk and block size for maximum application performance.

Raven Pro disk arrays offer a flexible upgrade path for all high-powered Macintosh systems via PDS, NuBus or software. PDS and NuBus versions provide a 32-bit data path via Fast/Wide SCSI-2.

MicroNet's Raven Pro is the newest addition to our family of award winning storage solutions. Based on proven Raven technology, it takes the science of disk array engineering to an unprecedented level.

MicroNet

All Trademarks, Registered Trademarks and Logos are of their respective holders.

Circle 139 on reader service card

SEE US AT SEYBOLD BOOTH #1119

Power Mac News

Fixing Power Mac Bugs

WHAT TO DO ABOUT WHAT DOESN'T WORK

DOUG ROSS

For most users, the path from 680X0 Macintosh to Power Macintosh is relatively painless. Migration is no more difficult than turning on the new computer, installing your software, and hooking the machine up to your network. But some users will encounter a few problems.

• The Power Mac randomly locks up with various 680X0 applications. According to Apple, under emulation some programs may require more RAM to run on the Power Mac, due to the differences in the memory-addressing scheme on the new models. The easiest solution is to give an application 25 to 50 percent more RAM via the Finder's Get Info function. If this doesn't work, try turning off the Modern Memory Manager option in the Memory control panel. (However, this trick could slow down native Power Mac software.)

• The Power Mac crashes or performs inconsistently with fax-modem software. All the major fax software has been updated to be fully compatible with the Power Mac line. Current software versions are Delrina FaxPro for Macintosh 1.5.1, Global Village TelePort 2.08b, Telefocus Faxstf 2.6.1 updater (for users of 2.X) or Faxstf 3.0.1 (for users of other versions), and PSI Faxcilitate 1.7. Both Faxstf and Faxcilitate are bundled with several fax modems.

• The Power Mac's internal video doesn't support monitors that sync on green (neither does the internal video in any AV Mac, Duo Dock, PowerBook, Quadra 605, or 040-based LC and Performa). The best solution is an adapter plug, such as the one offered by Griffin Communications (615/256-5794).

• Connectix's RAM Doubler does not load at start-up. You need to install version 1.5 (updaters are available from major online services) *and* you must turn off virtual memory.

• Apple's Power Macintosh Upgrade Card uses a different version of the PowerPC 601 CPU than the Power Macs do. The result is that certain classes of floating-point–math operations, such as exponential and logarithmic calculations (called transcendentals), will not be sped up. On AppleLink, Apple has released to developers a new version of its MathLib math libraries that may help.

• Apple's new System Update 3.0 has several fixes for the Power Macs (including 040-based Macs updated with Apple's PowerPC upgrade card). You can get a copy from any of the major online services or from Apple Customer Assistance at 800/767-2775.

• The recently released Berkeley Systems After Dark 3.0 and Adobe Systems Adobe Type Manager 3.8 address problems of slow performance on some scrolling operations.

• If you experience slow Power Mac network performance (especially on an Ethernet network), get Apple's Network Installer 1.4.5. You can find a copy on AppleLink, eWorld, or one of Apple's FTP sites. You can also order a copy from Apple Customer Assistance.—GENE STEINBERG

Shareware Goes Native

POWER MAC UTILITIES

The initially slow trickle of native commercial software was frustrating for many buyers of Power Macs. But overlooked in the wait is a steady stream of native shareware programs.

• Bill Goodman's classic $25 file-compression program, Compact Pro, is available as version 1.35p. True to native-software form, the new version requires more memory than does its predecessor (622K versus 504K).

• Another classic shareware program, Scott Berfield's $30 Mac Speedometer benchmarking tool, is also available in a version that includes native-mode tests.

• John Neil & Associates' $20 SoftwareFPU, which lets programs that rely on the 680X0 math coprocessor run on a Mac without such an FPU, is now available in a Power Mac version. To get it, users must download the 680X0 version from online services and send in their registration. Still, it's best to upgrade to a native Power Mac version of such FPU-requiring programs as soon as they are available.

• John Schack's $15 Correct Fractal Generator draws stunning, full-color fractal patterns.

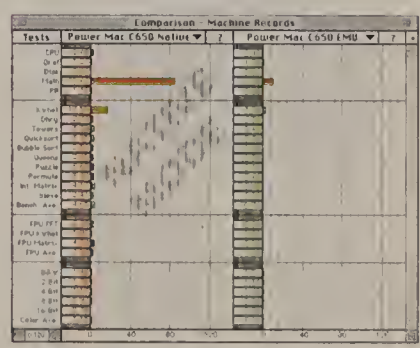
• Dartmouth College's Fetch 2.1.2 lets Power Macs using the MacTCP networking extension navigate Internet databases.

• Chipmunk Basic is a freeware BASIC programming language by Ronald H. Nicholson, Jr.

• Greg's Browser 2.2 by Greg Landweber is a four-paned, Finder-neatening $20 shareware file manager; and Greg's Buttons 3.2, a $15 utility, colorizes and adds 3-D touches to common Mac interface elements.

• Enigma 2.4, a free file-encryption program by Mike Watson, now password-protects files at 100K per second.

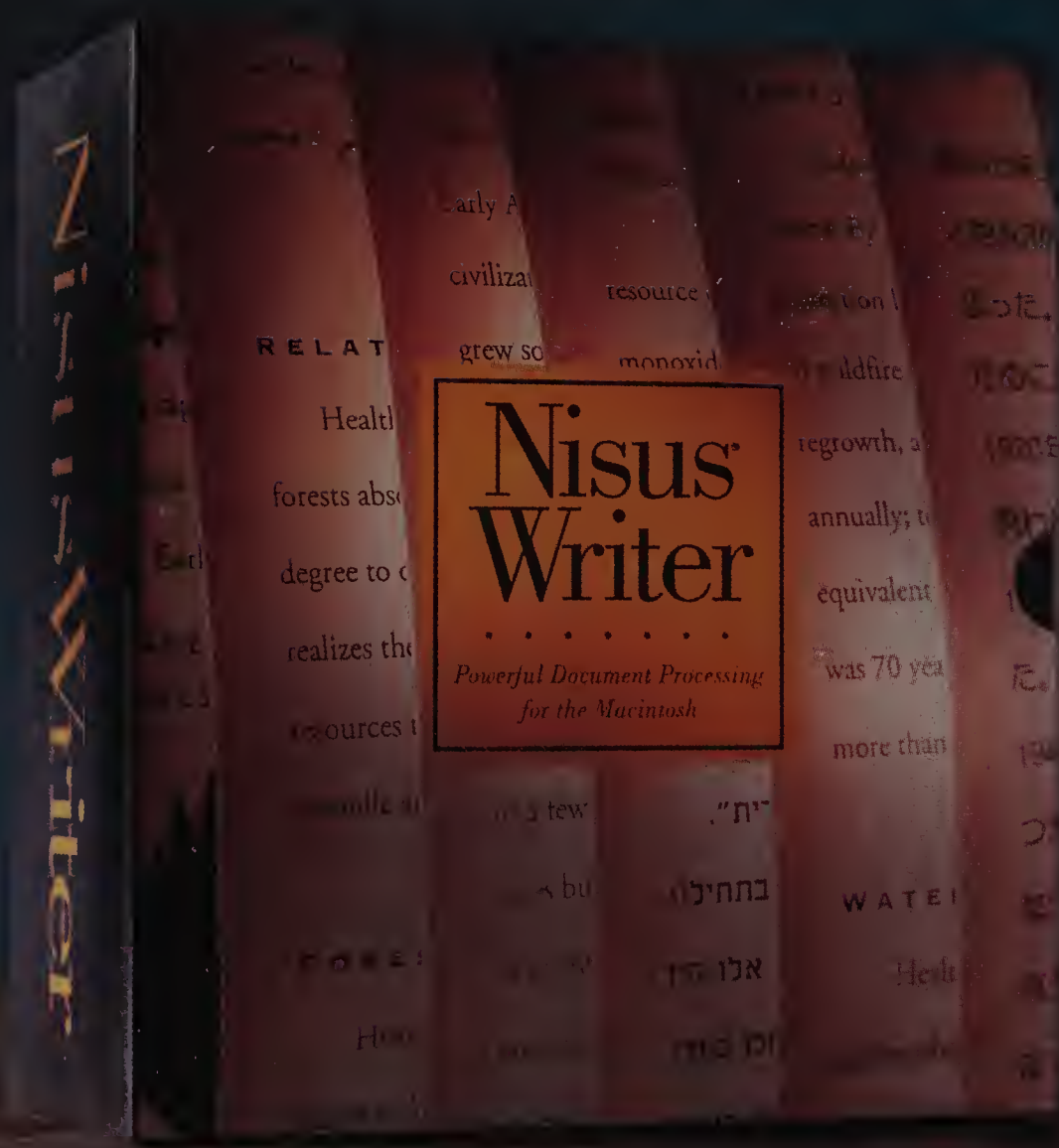
All this software is available from America Online, eWorld, CompuServe, and the Internet.—DAVID POGUE



Speedometer 4.0 lets you compare Power Macs against other Macs.

~ UNLIMITED UNDOS AND REDOS ~ APPEND TO TEN EDITABLE CLIPBOARDS ~ NONCONTIGUOUS AND RECTANGULAR SELECTION ~ DOCUMENT LINKING ~ TABLES ~ EQUATIONS ~ SEARCH IN UNOPENED FILES ~ DESKTOP PUBLISHING LAYOUT ~ TEXT WRAP AROUND GRAPHICS ~ FOOTNOTES AND ENDNOTES ~

Think Of It As Microsoft Word In About 10 Years.



AUTOMATIC SAVE AND BACKUP ~ DRAG AND DROP ~ STYLE SHEETS ~ OPEN SEVERAL FILES SIMULTANEOUSLY ~ GLOSSARY ~ ONLINE AND BALLOON HELP

~ SOUND ANNOTATION ~ TEXT-TO-SPEECH ~ QUICKTIME ~ PUBLISH AND SUBSCRIBE ~ WORLDSCRIPT SAVVY FOR FOREIGN LANGUAGE DOCUMENTS ~

Sure, Word's impressive. But it's no Nisus® Writer. By giving you the power to manipulate text in multimedia presentations, edit lengthy books, and create foreign language documents, Nisus Writer starts where ordinary Mac word processors stop. Of course, just because it's big on features doesn't mean it's big on memory requirements. At just 2 MB of RAM, Nisus Writer lets you spend less time waiting and more time writing. No wonder why critics are calling Nisus Writer the ultimate document processor. And why a lot of people are calling those other word processors yesterday's news.

NISUS
Software Inc.

TO RECEIVE A BROCHURE CALL 800-647-8794, OR FOR 24 HOUR IMMEDIATE FAX RESPONSE CALL 619-481-4366.

Nisus and Nisus Writer are registered trademarks of Nisus Software, Inc. All other product names are the registered trademarks of their respective holders.
Nisus Software Inc. - 107 S. Cedros Ave. - Solana Beach, CA 92075 (619) 481-1477, FAX (619) 481-6154.

Circle 123 on reader service card

New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS WITH 1MB OF RAM, RUNNING SYSTEM 6. A ◐ SIGNIFIES THAT A NATIVE POWER MAC VERSION OF THE PRODUCT IS AVAILABLE. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

HARDWARE

ColorPoint 2 PSF Models 4 and 14

Siblings to the Professional ColorPoint 2, these 300-dpi thermal-wax-transfer printers support PostScript Level 2. The Model 4 prints letter-size (8½-by-11-inch) pages, and can process full-bleed pages in one minute. The Model 14 prints tabloid-size (11-by-17-inch) pages, and can produce a single, full-bleed page in 80 seconds. Both printers come with 39 resident Type 1 fonts; the Model 4 comes with 16MB of RAM, and the Model 14 with 32MB. The ColorPoint printers have LocalTalk, Centronics parallel, and RS-232 serial ports standard; and both models support an optional Ethernet adapter. Model 4 $5999; Model 14 $8999. Seiko Instruments USA, 408/922-5800, 800/888-0817; fax 408/922-5835.

JX-330

This 24-bit color flatbed scanner has an optical resolution of 600 dpi (interpolated resolution is 2400 dpi) and a scanning area of 8½ by 14 inches. The JX-330 comes bundled with Adobe Photoshop 3.0, and optional transparency adapters are available. $1500 (price not final at press time); transparency adapters $1100 to $1300. Sharp Electronics Corporation, 201/529-8200, 800/237-4277; fax 201/529-9636.

Mercury 4.2 GB Superfast Drive

If you've got a Mercury docking bay or a Mega Drive RAID array (MR/MK series) and an itch for more speed and more space, this 3.5-inch docking drive might be just the ticket. The 4.2 GB drive is based on the Seagate Barracuda mechanism and offers an 8ms average access time and sustained data throughput of up to 4 MBps. $3999. Mega Drive Systems, 310/247-0006; fax 310/247-8118.

Mercury 4.2 GB Superfast Drive

Mirror 14-inch Trinitron Display

The name of this 14-inch, multiresolution color monitor tells the story. The Trinitron tube features a 0.26mm aperture pitch, and the monitor supports resolutions up to 640 by 480 pixels at vertical refresh rates up to 90Hz. $499. Mirror Technologies, 612/832-5622, 800/654-5294; fax 612/633-3136.

Mirror 14-inch Trinitron Display

Mirror 4GB and 9GB Hard Drives

The smaller of this pair of SCSI hard drives features an average access time of 8ms and a sustained data-transfer rate of up to 8.9 MBps. The larger of the two features an average access time of 11ms and a sustained data-transfer rate of up to 8.25 MBps. Both drives ship with cables, a terminator, and formatting and testing software. 4GB external $3529, internal $3469; 9GB external $4595, internal $4499. Mirror Technologies, 612/832-5622, 800/654-5294; fax 612/633-3136.

QuickCam

Remember to smile and watch the birdie when you use this black-and-white digital video camera to record your own QuickTime movies. The QuickCam records at up to 15 frames per second, has a built-in microphone, and plugs into the Macintosh's serial port. Basic recording/editing software is included, as well as a desk accessory that you can use to capture still images through the QuickCam. $149. Connectix Corp., 415/571-5100, 800/950-5880; fax 415/571-5195.

Series 2000 Snappable Hub

You'll be the center of attention when you install an Ethernet hub in your office. These stackable 10BaseT hubs come with 16 RJ-45 ports and 2 expansion ports; you can stack up to 10 Series 2000 hubs using UTP wire as a backbone. The hub is SNMP manageable over TCP/IP or Novell IPX, and an optional 17th port can be filled with a thick (AUI) or thin (BNC) Ethernet connector or an FOIRL link (fiber optic). $1295; AUI $250; BNC $275; FOIRL $325. NetWorth, 214/929-1700; fax 214/929-1720.

Spectra Com 28K-XL

Spectra Com 28K-XL

When 28.8 Kbps just isn't fast enough, this fax modem can also handle two-wire leased-line connections, and it features autodial backup and line restoration. On the more mundane side, the 28K-XL's data modem is compliant with the ITU-T speed and error-correction standards up to V.32bis and V.42bis. The unit includes a 14.4-Kbps send/receive Group III fax. $249. Bay Connection, 408/270-8070, 800/475-8329; fax 408/270-0698.

TelevEyes/Plus

You can use your television as a display with this hardware. Compatible with any Macintosh that can produce VGA video (Quadra, Centris, LC, PowerBook 160/180, and Duo with dock), the TelevEyes/Plus comes with software for controlling image underscan/overscan and position. The box also features a microphone input that lets you add audio to your productions and 3-watt output jacks for driving speakers at a presentation. $449.95. Digital Vision, 617/329-5400, 800/346-0090; fax 617/329-6286.

Troll Touch PB500

In the grand tradition of point-and-click, this touch screen mounts inside the case of your 500-series PowerBook (installation by manufacturer). The Troll Touch screen is pressure-sensitive, provides 4096 by 4096 points of resolution, and records up to 60 touches per second. Because the company uses resistive technology, a capped pen or gloved hand will work just as well as a bare finger. The screen draws power from and sends input to an ADB controller box, which mounts on the lid of the PowerBook. $695. Troll Technology, 805/295-0770; fax 805/295-0771.

SOFTWARE

Art Explorer

Aimed at kids (and adults) who have outgrown basic paint programs but who aren't yet ready for expensive, full-blown art software, this software package has common graphics tools, plus textures; gradient fills; special painting modes (dye, glaze, tint); and tools that mimic charcoal, airbrushes, and ink markers. Art Explorer also includes precooked backgrounds and clip art, as well as stencils to color in. 4MB min. memory; requires color, System 7, 13-inch monitor. $49.95. Aldus Consumer Division, 619/558-6000, 800/888-6293; fax 619/695-7902.

Art Explorer

CADMover 4

This vector-graphics translator can read the native file formats of more than 70 applications, including AutoCAD, Adobe Illustrator, Ray Dream Designer, and Canvas. CADMover also understands

continues

common exchange formats such as IGES, DXF, and EPSF. Version 4 includes a drawing previewer and support for ClarisCAD, MiniCad+ 4, Wavefront, Presenter Pro, and Envisage 3-D. $495. Kandu Software Corp., 703/532-0213; fax 703/533-0291.

CD AutoCache

If you're interested in increasing the performance of your CD-ROM drive but you don't want to spend hours tweaking packet and buffer sizes, this application-and-extension combination examines each CD and automatically adjusts the cache parameters depending on how the disc was mastered. The CD AutoCache package includes a mini–SCSI manager with full Logical Unit Number support, plus an Audio DA for listening to audio CDs. With the AutoCache software, users can also digitize CD audio to a hard drive. $79.95. CharisMac Engineering, 916/885-4420, 800/487-4420; fax 916/885-1410.

CD AutoCache

Crossword Wizard

Addiction is a terrible thing to witness, so we hesitate to tell you about this way to support your crossword-puzzle habit. Against our better judgment, we inform you that Crossword Wizard automatically generates puzzles, up to 21 squares across, from its database of words and clues. Our dedication to duty demands that we mention its multiple hint modes, its letter-by-letter word-builder function for finding obscure words, and the included Idea Wizard software that reveals how Crossword Wizard relates words and ideas together. 3MB min. memory. $49.95. Cogix Corp., 415/454-7217; fax 415/457-4089.

DesignReality

This surface-modeling tool features skinning, surface offsets, extrusions, sweeps, and patch surfaces. Users can punch holes through surfaces, create hull shapes, generate surfaces from a section, and generate a profile along a contour. You can duplicate an object or mirror it to create a reflection along any axis. Stretch and mold tools let you dynamically alter geometric configurations. You can define multiple light sources and positions, plus assign a name and color to any object. Panoramic viewing lets you view a design from any location. DesignReality imports DXF, EPS, and Vellum files; it exports to Vellum, IGES, and DXF 3D, among others. 16MB min. memory; requires Mac IIci, math coprocessor, 8-bit color, System 7.1. $1995. Ashlar, 408/746-1800, 800/877-2745; fax 408/746-0749.

Dramatica

This tool can help you create blueprints for your stories, making sure that all the elements of character, plot, and theme are in place, and keeping track of these central threads through revisions. Dramatica starts with a query system; as a story develops, the software's story engine helps keep the important elements in sync and relates them to the overall structure of the story. Dramatica also includes character-building tools to help writers develop and flesh out characters with motivations and purposes. 4MB min. memory; requires System 7.1. $399. Screenplay Systems, 818/843-6557; fax 818/843-8364.

Dramatica

Flying Colors

This color painting program provides three levels of interface. You can hide all but the simplest tools for easy use by small children; reveal most of the tools and features for more advanced users; or run at the top level, with features like opacity control and masking. Flying Colors includes most common paint tools, and comes with backgrounds, image stamps, and clip art for younger users. 4MB min. memory; requires 8-bit color. $40 estimated street price. Davidson & Associates, 310/793-0600, 800/545-7677; fax 310/793-0601.

FolderBolt Pro

Linus had a security blanket, but warm and fuzzy is not going to keep your files safe from prying eyes. This program locks and optionally encrypts files, folders, and entire volumes. This latest, native Power Mac version increases the speed of both DES and FolderBolt's proprietary encryption feature. The Incinerate (data-shredding) and EasyTrash (⌘-*key*–based file-trashing) functions have also been accelerated, and FolderBolt Pro can now interpret and unlock files locked with the Windows version of FolderBolt. $129.95. Kent Marsh, 713/522-5625, 800/325-3587; fax 713/522-8965.

Glider Pro

Return with us now to the air currents of yesterday. If you are a paper-airplane jockey, check out the new version of this "flight simulator." Your glider now flies over meadows and rooftops, pops in and out of mailboxes, and ventures underground, while you search for the Magic Star Wand. Two players can fly Glider Pro simultaneously, either working together or competing for the collectibles in each scene. Requires System 7. $49.95. Casady & Greene, 408/484-9228, 800/359-4920; fax 408/484-9218.

continues

Even though PowerBooks are portable, they aren't always convenient. Batteries die, data gets lost or stolen, and controlling the cursor is, well, a curse.

Connectix PowerBook Utilities™ (CPU) solves these problems and makes your PowerBook a real pleasure to use.

A PowerBook with CPU installed:
- Extends your battery life
- Displays accurate battery status
- Allows keyboard shortcuts for menus and dialogs
- Protects your files
- Instantly sleeps and wakes
- Saves your LCD screen when inactive
- Keeps the cursor visible
- And has over a dozen other enhancements.

CPU is the award-winning, number one selling PowerBook utility. And now CPU works with all the new '040 PowerBooks.

Order CPU from your favorite dealer or call us at (800) 950-5880 toll-free today.

CPU
CONNECTIX POWERBOOK UTILITIES

© 1994 Connectix Corporation 2600 Campus Drive, San Mateo, CA 94403. (415) 571-5100 phone (415) 571-5195 fax. CPU is a trademark of Connectix Corporation. PowerBook is a trademark of Apple Computer, Inc. All other trademarks are the property of their respective holders.

Circle 189 on reader service card

The Resolution Revolution

1800 DPI

Unity™ 1800XL-O Plain-Paper Typesetter

Introducing the new Unity™ 1800XL-O Plain-Paper Typesetter. Once again, LaserMaster® leads the industry and breaks another resolution barrier with 1800x1800 TurboRes!® The Unity 1800XL-O offers the highest-quality camera-ready output available on plain paper. It prints fine lines, flawless text, incredibly smooth halftones and screens, and offers the convenience of oversized typesetting.

TURBORES® FAST • LOW COST • RECYCLABLE TYPESETTING

Cost-Effective Camera-Ready Output

With the Unity 1800XL-O you get camera-ready output from your desktop for only pennies a page. It saves in-house groups both time and money by providing complete camera-ready pages that can be handed off to the print shop. And if you provide plain-paper typesetting as a service, the Unity 1800XL-O eliminates many of the steps involved in the pre-press process.

Oversized Typesetting

With the Unity 1800XL-O you'll never have to hassle with keylining, stripping, or tiling again! Its 12"x19.5" paper support allows you to print 11"x17" documents with full bleeds, crop marks, and registration marks. With oversized printing and camera-ready 1800-dpi output, you can easily take projects from concept to completion.

For More Information

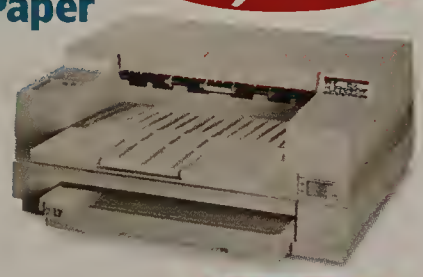
The Unity 1800XL-O—the industry's new pinnacle of quality. Don't settle for less! Call now for more information and some sample output.

Features:	Benefits:
Oversized Typesetting	Up to 12x19.5-inch pages allow for full bleeds with crop and registration marks—eliminates paste-up.
1800-dpi Resolution	For camera-ready text, halftones line art, reverses, screens.
Internal Hard Drive	Stores thousands of fonts, eliminates font downloading.
Multi-Platform/Networking	Mac, PC, and Unix users can all attach to the same printer.
235 Premium Type 1 Typefaces Pre-Installed	Provides high-quality typographic flexibility.
ClearCopy™ Copier Enhancement	Ensures halftones look crisp and clear after photocopying.
66-MHz Processor	Processes print jobs fast.
Gamma Correction	Adjusts images to compensate for dot gain on press.
Software Upgradable	Prevents obsolescence.
TurboGray™ II Technology	Improves the appearance of halftone images.

$6,995

Unity 1800XL Plain-Paper Typesetter

Multi-platform, camera-ready 1800-dpi output, 11"x17" paper support (upgradable to oversized), and 135 pre-installed typefaces.



$4,995

LaserMaster 1200XL Personal Typesetter

Single platform, camera-ready 1200-dpi output, 11"x17" paper support, and 135 typefaces.

LM® LASERMASTER®
TURBORES TYPESETTING DIVISION

The Professional's Choice™

CALL 800-220-9180 DEPT. 85W

or 612-944-9330 Fax: 612-944-0522

Circle 102 on reader service card

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344, (612) 944-9330. LaserMaster Europe, Ltd., Hoofddorp, The Netherlands, (31) 2503-22000. LaserMaster, the LM logo, and TurboRes are registered trademarks; "The Professional's Choice," TurboGray, ClearCopy, and Unity are trademarks of LaserMaster. All other product or brand names are marks of their respective holders. These products incorporate the PowerPage interpreter from Pipeline Associates, Inc. All rights reserved. Specifications and pricing subject to change without notice. This ad was typeset on the Unity 1800XL-O Plain Paper Typesetter. Prices available in U.S. only. (AMF/JSD) 7/94

POWERPAGE

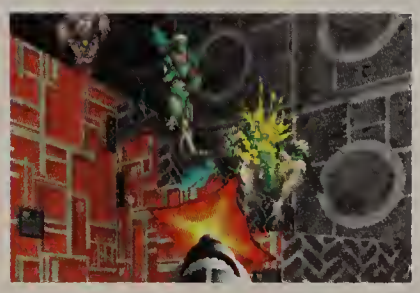
Launch Pad
You want to turn your kids loose on your Mac but you fear they'll nuke your files or scramble your settings. Launch Pad provides kids with a friendly desktop of their own and keeps their files and settings separate from yours. From behind the dashboard of an imaginary rocket car, kids can use applications that parents have approved. A graphic backdrop displays one of six worlds filled with animations and sounds. The interface also includes a talking calculator and clock. Expected street price $30. Berkeley Systems, 510/ 540-5535, 800/344-5541; fax 510/ 540-5115.

Launch Pad

MacEmulate 3.0
Sad though it may be, not every platform has a GUI interface, and sometimes you have to connect to one that doesn't. This terminal-emulation software supports 132 columns, multipage memory; programmable function keys; and over 15 terminal-emulation modes, including VT100 and VT220. The latest version (3.0) of MacEmulate supports Apple's Comm Toolbox and includes Xmodem and text-transfer tools. $199. Cornerstone Data Systems, 714/772-5527; fax 714/772-2838.

MacLinkPlus/HP Palmtop
If you keep your addresses, numbers, or recipes in an HP Palmtop, you can transfer your data to and from your Macintosh. This package includes data-transfer and -translation software; you can import and export files in Dynodex, Address Book Plus, FileMaker Pro, Excel, and other formats. MacLinkPlus/HP Palmtop includes a serial cable kit. $129. DataViz, 203/268-0030, 800/733-0030; fax 203/268-4345.

Marathon
The aliens are at it again. You, as the science officer of a deep-space colony ship, are the last line of defense against hostile and intelligent intergalactic troublemakers. Fortunately for the human race, you've got awe-inspiring, futuristic weaponry and you know how to use it. This 3-D, texture-mapped, action-adventure game features dynamic lighting effects and stereo sound. 3MB min. memory; requires 8-bit color. $69.99.


Marathon

Bungie Software Products, 312/563-6200; fax 312/563-0545.

Network Troubleshooting Starter Kits
Based on the AG Group's EtherPeek and LocalPeek packet-level network-analysis programs, these kits combine tools, training, and reference materials into a single package. In addition to the network analyzers, the packages each include two instructional videotapes, a reference textbook, and several network-management utilities. LocalTalk $795; Ethernet $1095. AG Group, 510/937-7900, 800/466-2447; fax 510/937-2479.

Nok Nok
Recently acquired and updated by the AG Group, Nok Nok is a control panel that notifies you when an outsider connects to your machine; Nok Nok logs the name of the visitor, even if he or she is attempting to log on anonymously as a guest. Version 2.0 has sliding controls with which the host user can set how much CPU time will be dedicated to file-sharing tasks. Also, the utility can automatically open the File Sharing Monitor when a visitor logs on and close it when all visitors have left, and if Apple's text-to-speech software is installed, Nok Nok will announce a visitor by name. $50. AG Group, 510/937-7900, 800/466-2447; fax 510/937-2479.

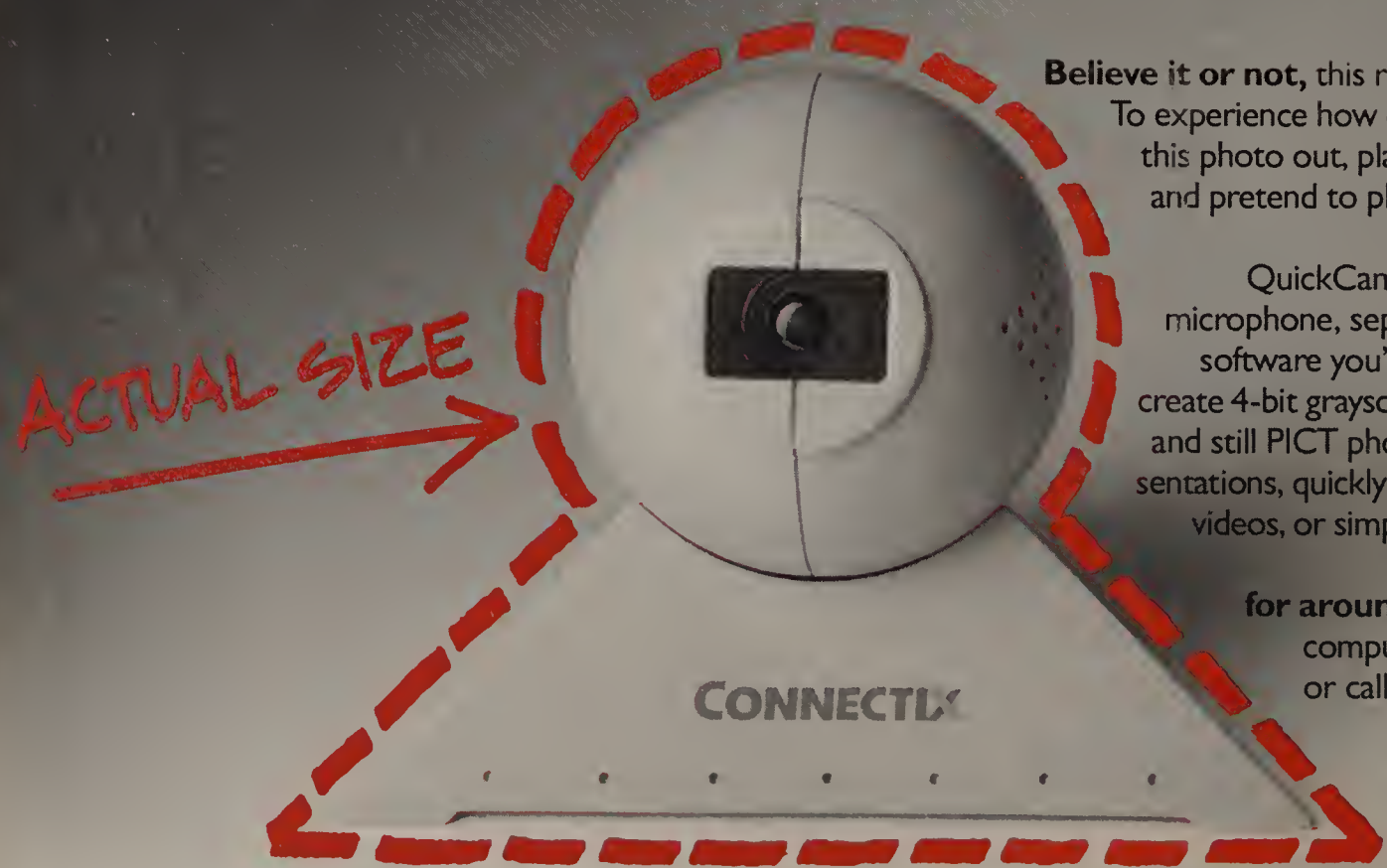
PageMaker 5.0 Enhancement Pack Volume 1 for Macintosh
The package of utilities includes the QuarkXPress Converter, which translates XPress documents into native PageMaker 5.0 format. The software maintains XPress text attributes, style sheets, TIFF and EPS formats, and image links. $9.95. Aldus Corp., 206/622-5500, 800/628-2320; fax 206/628-5737.

PageTools
Software is never perfect—fortunately, you can easily add utilities to programs like PageMaker. This package is a set of ten PageMaker utilities that add everything from a customizable menu bar of functions to expanded object-alignment and -distribution options. Elements of PageTools offer enhanced object-color manipulation; file-previewing capability; single-click guide creation; and extra floating rulers that operate independently of a document's anchored rulers. Requires PageMaker 5.0. $129. Extensis Corp., 503/274-2020; fax 503/274-0530.

ResumeMaker for Macintosh with Career Planning
There is plenty of software that can help you when you're on the job, but what about when you don't have a job? ResumeMaker helps users create résumés and job-hunting correspondence, including cover letters and thank-you letters. In the Prospects section of the program, users can log information about their job leads, target companies, and contacts. The latest version of ResumeMaker features extra career guidance and job-search techniques in

continues

Introducing the **coolest**, least expensive video camera for the Mac.
Rehearse with this until you get your own QuickCam.



Believe it or not, this really is a video camera. To experience how easy QuickCam™ is, cut this photo out, place atop most any Mac and pretend to plug into the serial port. **That's it.**
QuickCam comes with a built-in microphone, separate base, and all the software you'll need to immediately create 4-bit grayscale QuickTime movies and still PICT photos. Jazz up your presentations, quickly prototype multimedia videos, or simply amaze your friends.
Pick up QuickCam for around $100 wherever fine computer products are sold or call us at (800) 950-5880 x501 toll-free **today.**

QUICKCAM

© 1994 Connectix Corporation 2600 Campus Drive, San Mateo, CA 94403. (415) 571-5100 phone (415) 571-5195 fax. QuickCam is a trademark of Connectix Corporation. QuickTime is a trademark of Apple Computer, Inc. All other trademarks are the property of their respective holders

Circle 191 on reader service card

IT'S GONE. AND YOU DIDN'T BACK IT UP.

FACE IT. YOU NEED to back up your files. Use Retrospect, the number one Macintosh backup software — backing up over one million Macs, at last count.

Dragging important files to floppy disks is not backing up. If you crash you'll be retyping and trying to recover files for days. And then still searching for what's missing months later. And what if there's a fire, theft, flood, or equipment breakdown?

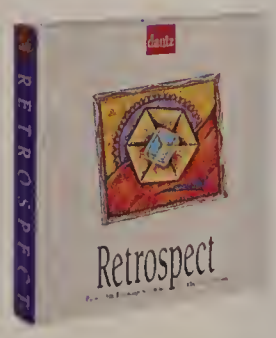
dantz

With Retrospect from Dantz you'll be backing up to the storage device of your choice in seconds — including SyQuest, Optical, Bernoulli, floppies, and file servers. And just about any Macintosh tape drive you choose. Retrospect packs more power than all the others put together.

AUTOMATIC OPERATION. Simply point and click to create a script, then schedule it to run days, nights, or weekends.

WORLD CLASS RESTORING. Every preference file, document, application, control panel, extension and font is returned to its exact location. You won't miss a beat.

SECURITY. Retrospect has security covered, with full password protection at every entry point. Even encrypt data passed over the network to prevent snooping.



SPEED. Retrospect's customized drivers and interleaved data flow operate SCSI storage devices 20%-100% faster than any other backup software — guaranteed.

Accelerated for Power Macintosh

COMPRESSION. Retrospect's built-in Lessr™ compression cuts backups down to size without compromising performance.

NETWORK OPERATION. Back up a network of Macintoshes as easily as you back up one. Just install a Remote INIT (available in Remote 10- or 50-Packs) on each of your networked Macintoshes and include them in your backup scripts.

TOP INDUSTRY AWARDS. Don't just take our word for it. Listen to what experts say about Retrospect: "Retrospect has no equal." *MacWeek*, Diamond Award. "For backing up and archiving, there's nothing better." *Macworld*. And Retrospect Remote is a *MacUser* 1993 Editor's Choice Award winner.

The price for peace of mind? Well under $200 — backed by a 30 day money back guarantee. Don't be caught off guard when disaster strikes, call your local dealer today.

Dantz Development Corp., 4 Orinda Way, Building C, Orinda CA 94563 (510)253-3000.

© 1994 Dantz Development Corp. Retrospect and Lessr are trademarks of Dantz Development Corp. Macintosh is a registered trademark, and Power Macintosh is a trademark, of Apple Computer, Inc used under license.

Circle 26 on reader service card

THE VIRTUAL STUDIO COMPANY™ STRATA

Unleash the Power!

The Gateway To 3-D Power

Strata Vision 3d is designed for the graphic illustrator to create amazing 3-D graphics and effects. Use the familiar desktop tools to model 3-D images for high-impact annual reports, product packaging, and brochures.

Teich

Plus, Strata Vision 3d is the only 3-D software in its class to offer award-winning animation tools.

Lajara

STRATA

MacUser 4½ MW EDITORS CHOICE

Accelerated for Power Macintosh

STRATA VISION™ 3d

Call 1-800-Strata3d

Strata, Inc. • 2 West St. George Boulevard, Suite 2100
St. George, Utah 84770 • (801) 628-5218, Fax (801) 628-9756

Circle 114 on reader service card

the form of Richard Nelson Bolles' New Quick Job-Hunting Map, which is drawn from his book, *What Color Is Your Parachute?* $49.95. Individual Software, 510/734-6767, 800/ 822-3522; fax 510/734-8337.

Wolfenstein 3D
One of the hottest action/arcade titles for the PC is appearing on the Macintosh. Captured by Nazis, you must find the plans for Operation Eisenfaust and escape from the prison keep, Wolfenstein. You'll rely on your wits and whatever weapons you can find in this fast-paced first-person adventure. Wolfenstein 3D ships in both Power Mac and 680X0 versions. 2.5MB min. memory; requires 8-bit color. $49.95. MacPlay, 714/553-3522, 800/736-5738; fax 714/252-2820.

World of Words
You can never be too rich, too beautiful, or too educated. This vocabulary-improvement software is aimed at high school students studying for their SATs. World of Words is based on a teenager named Luther, who sprinkles stories and illustrations about his favorite bands with vocabulary words culled from previous SATs. Students can hear the words read aloud, words are linked with distinct images, and words are grouped into Word Families, creating a structure of relationships between words. $69.95. Randolph Educational Services, 201/328-1512; fax 201/328-2893.

CD-ROMS

Buried in Time
In this sequel to The Journeyman Project, you'll once again become Temporal Security Agent #5, the time-traveling law-enforcement officer. When you discover that you've been framed for altering history, you must travel to past and future worlds and solve complex puzzles in order to prove your innocence. Buried in Time combines rendered images, video, and animation with a stereo sound track to bring your quest to life. 8MB min. memory; requires color Mac, double-speed CD-ROM drive, System 7. $79.95. Sanctuary Woods Multimedia Corp., 415/578-6340, 800/665-2544; fax 415/578-6344.

Buried in Time

Corel Gallery for the Macintosh
This disc contains more than 10,000 clip-art images in PICT format; 6000 of the images are in color, and the product includes browsing/selection software. The Gallery package also includes the Corel Professional Photo Sampler Disc, which contains 100 stock photographs in Photo CD format. $59. Corel Corp., 613/728-8200, 800/836-3729; fax 613/728-9790.

Doctors Book of Home Remedies
Everyone needs a physician at some point, but this disc provides preventive health-care tips and advice. The product includes a database of over 2000 practical cures; 25 minutes of video; and health-related tips and techniques, such as 29 tips for dealing with the common cold and 27 ways to reduce cholesterol. The Doctors Book of Home Remedies also includes toll-free listings of support and treatment agencies and an interactive personal checkup based on a user's personal data and habits. $39.95. Compton's NewMedia, 619/929-2500, 800/862-2206; fax 619/929-2600.

Dracula Unleashed
It's several years after Count Dracula took a stake through the heart in Bram Stoker's original novel, but he's managed to inhabit another body, and it's your job to find out whose. This adventure game uses 96 minutes of video to create 135 scenes through which you must navigate. Every choice affects your path, and there is more than one way to end this story. 2.5MB min. memory; requires Mac LC, 8-bit color. $59.95 street price. Viacom New Media, 212/258-6000, 800/469-2539; no fax.

ImageVault Pro
This four-disc set contains over 380 royalty-free, model-released stock photos. The package includes access software—you can browse images and export them in PICT, TIFF, TIFF-YCC, or EPS format. All images come in 300 dpi, in five sizes: wallet (128 by 192 pixels), snapshot (256 by 384), standard (512 by 768), large (1024 by 1536), and poster (2048 by 3072). 4MB min. memory; requires 8-bit color. $349. American Databankers Association, 918/742-2022, 800/775-4232; fax 918/742-8176.

Shoot Video Like a Pro
Anyone can create video with a camcorder, but making it look good is another matter entirely—this disc contains a set of tutorials on sound, light, and shot composition. In each lesson, you get to experiment with the lights, microphones, and camera position on an imaginary shoot. The tutorials include specific advice from video professionals on how to get the results you want. $59.95. Zelos Interactive Media Publishers, 415/788-0566; fax 415/788-0562.

Weatherstock Weather Photo-CD
You can't beat mother nature for images of beauty, power, and sheer destruction—this disc has 100, 24-bit images of everything from lightning and tornadoes to moonrises and puffy clouds. All images are in Photo CD format. $99. Weatherstock, 602/751-9964; fax 602/751-1185.

Weatherstock Weather Photo-CD

ACCESSORIES

NoteBook Traveler Leather Carrier
If you've always wanted to wrap your PowerBook in black leather, this may be your chance. This carrying case is about the size of a double-wide briefcase and can accommodate a PowerBook and a portable printer, as well as business cards, magazines, papers, pens, power supplies, disk drives, floppies, a cellular phone, and many of the other amenities-cum-albatrosses of the modern mobile executive. $265.95. Kensington Microware, 415/572-2700, 800/535-4242; fax 415/572-9675.

Notebook Traveler Leather Carrier

PowerAssist
Scratch a PowerBook user and you will find a ravening beast, hungry for both power and tiny accessories. PowerAssist is an AC adapter for 100-series PowerBooks that is roughly one-third the size of Apple's power adapter. The PowerAssist will merely extend the life of your battery by four times while you are plugged in and working; when you put your PowerBook to sleep, PowerAssist will charge your PowerBook battery. $69. Newer Technology, 316/685-4904, 800/678-3726; fax 316/685-9368.

Red Guard
It never fails—just as you're about to finish that five-hour download, someone picks up an extension phone and dusts your connection. You'll never have that trouble again if you add a Red Guard device wherever you have a phone extension. The compact module locks extensions out of the circuit while your modem or fax machine is in use. Package of three $29.95. ORA Electronics, 818/772-2700; fax 818/718-8626.

SCSI PowerPlug
Some people's idea of a removable hard drive is when you unplug the drive from the SCSI chain and trot it over to another workstation. The SCSI PowerPlug lets you add and remove devices to and from a SCSI chain without turning off your Macintosh. $79.99. ADCON Corp., 203/761-0651; fax 203/761-1444.

SCSI Switch/Extender
With this device you can connect two Macintoshes (or a Mac and a PC) to the same SCSI chain. The box has two inputs and one output—switching is controlled via a rocker switch on the front panel—and the device checks to make sure that the SCSI bus is quiet (no data is being passed) before switching from one line to another. Also users can extend their SCSI cable runs up to about 20 feet. Desktop $495; rack-mount $595. Glyph Technologies, 607/275-0345; fax 607/275-9464.

BOOKS

Fantastic Fax Modems
Fax modems are easy to buy but not so easy to use. Author John McCormick teaches you how to buy both Mac and PC fax modems and software, and then how to get the most out of your purchases. The book covers troubleshooting, image and color transmissions, overseas faxing, converting faxes to text files, and faxing from the road. 240 pages. $21.95. Windcrest/McGraw-Hill, 717/794-2191, 800/822-8158; fax 717/794-2080.

Fantastic Fax Modems

Macromedia Director Design Guide
You can produce sophisticated multimedia presentations with your Mac—if you know what you're doing. This book contains tips and techniques for designing interactive multimedia with Macromedia Director. Written by Lee Swearingen and Cathy Clarke, the book includes a CD-ROM with example projects, tools, and clip media, as well as a working version of Macromedia Director 4 with only the save function disabled. 198 pages. $29.99. Hayden Books, 317/581-3500, 800/428-5331; fax 317/581-3550.

Newsletters from the Desktop
Professional designers know how to complement editorial content—that's their job. But if you're publishing a newsletter, you might not be a professional. You might like to know about newsletter building blocks, templates, prototypes, and getting professional pizzazz on a pizza budget. Authors Joe Grossmann and David Doty cover everything from choosing a headline type, to using a service bureau, to preparing for the printer. 350 pages. $24.95. Ventana Press, 919/942-0220, 800/743-5369; fax 919/942-1140. m

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94017. *Macworld* reserves the right to edit all product announcements.

STRATA

Unleash the Power!

3-D Professional Power

Strata StudioPro is the most comprehensive 3-D program available on the Macintosh. StudioPro offers:

Boolean Modeling
MetaBalls
Warp
Bend
Twist
3d Sculptor
Explode
Shatter
Atomize
Extrude Along Path

STRATA

Accelerated for the Power Macintosh

MW EDITORS CHOICE
MacUser 4½
SyMac

StudioPro 1.5 is now available

STRATA™ STUDIO Pro

Call 1-800-Strata3d

Strata, Inc. • 2 West St. George Boulevard, Suite 2100
St. George, Utah 84770 • (801) 628-5218, Fax (801) 628-9756

Circle 116 on reader service card

There is nothing like the feeling of losing your data. There is nothing like booting up to find that your twenty-page conference report has burned to a crisp. Or watching a month's worth of virus-infected spreadsheets go up in smoke right before your eyes.

When it happens, a rush of job-security panic begins in your legs and rapidly bolts all the way up to your cerebellum. And the impact of losing all of your hard work affects you in a way you'll certainly never forget.

Data loss. It's one fiery disaster that makes for an awfully bad day.

Proactive Protection For Your Macintosh.

This being the way things are, at Symantec we subscribe to the theory that the best way to deal with a disaster is, well, to prevent it in the first place. Which is the very reason for our newly updated Norton Utilities® and SAM.® In a word, they're proactive. But to put it more poetically, this improved data-protection software actually snuffs out fires without so much as the stirring of your mouse.

New Norton Utilities Detects Damage Before Disasters Happen.

For starters, look at our new Norton Utilities 3.0. We've taken the industry's most powerful data recovery and repair program and improved it to where it's almost invisible. So that now you can virtually load it and forget it.

NEW NORTON AND FIRES EVEN BEFORE YOU

The new versions of Norton Utilities and SAM provide proactive protection. Kind of like little firemen running around behind the scenes stamping out fires before they can ever start. So, even if it could've been a ten alarmer, you'll never hear a thing.

The enhanced Filesaver feature proactively and consistently works to maintain your system at premium health by scanning in the background for early signs of trouble. This new agent-oriented technology is a Norton exclusive that personally reminds you when it's time to do basic data maintenance such as backing up or optimizing. In terms you can easily understand. It also automatically monitors your data for up to 500 deleted files so they can be easily recovered.

Once a problem has been detected, Norton Disk Doctor takes over. Improved Disk Doctor recommends a solution and then executes it on your command. It now hunts down, diagnoses, and repairs problems in more areas of the disk than any other software.

* Prices may vary. Shipping, handling and tax extra. This offer not good with other promotional offers. Resellers not eligible. Offer expires 12/31/94. Symantec, Norton Utilities and SAM are U.S.

The enhanced Speed Disk's unique customization feature lets you defragment everything from a whole volume to a selected file.

And Norton Utilities 3.0 now also includes enhanced backup. Which creates self-extracting and self-restoring backups of your data.

This improved capability makes it even easier for you to restore data during emergency situations. And our backup now also supports tape drives.

Peter Norton has always been well ahead of the pack when it comes to desktop data recovery and antivirus protection software.

greatest level of protection against new viruses as they are discovered.

The new SAM also scans for and destroys viruses in more types of compressed files than any other antivirus software can. SAM covers DiskDoubler, Compact Pro, StuffIt, and Now Compress. This ensures your ability to detect and eliminate a virus in any compressed file.

And for all of you who have a healthy appreciation for speed, the means accelerated scanning speed, greater productivity, along with even more transparent protection.

What it shakes out into is that improved Norton 3.0 and SAM 4.0 now provide your Mac with the ultimate available levels of proactive protection against data loss. It's all rather amazing.

Then again, maybe all of these advancements are not so amazing. After all, Symantec is, of course, the proven industry leader when it comes to Mac data repair and recovery and virus protection.

SAM. THEY PUT OUT CAN SMELL THE SMOKE.

New SAM Provides The Best Protection Against Viruses.

However, that's just the half of this proactive pair. We've also fully redesigned SAM 4.0 to provide the most complete and most effective virus protection, detection, and elimination of known and unknown viruses. So that what could turn your entire system into a towering inferno never even becomes a spark.

Accelerated for Power Macintosh

Norton and SAM are accelerated for Power Mac, letting users take full advantage of the speed capability this technology provides.

One of SAM's exclusive features is automatic virus updating. Through your modem, SAM automatically dials the Symantec BBS daily, weekly, or according to any schedule you tell it to follow.

It then downloads the latest virus antidotes and updates your virus definition files. So you now no longer have to mess with manual updating. This assures you have the improved SAM is also the faster SAM. The 4.0 version scans for viruses significantly faster than its predecessor. Which makes virus protection more seamless and less disruptive to your work flow.

Want more? Okay, SAM is also the only virus protection software that allows you to create a custom decontamination disk specific to your machine. This lets you reboot your Mac easily should your system crash from a virus.

The 4.0 version also simplifies the user interface by combining SAM Intercept and Virus Clinic into one easy-to-use component. This advancement allows you to configure more expert options from one convenient location.

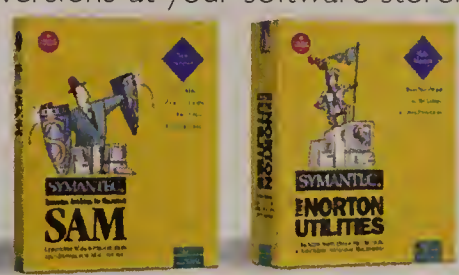
Power Mac Native.

While these new versions will protect your original Mac, they are also Power Mac native. So those of you with a Power Macintosh can take full advantage of the increased processing power. Ultimately, that

So, pick up the entirely new versions of Norton Utilities and SAM. And then, if you smell something burning at the office, you'll know it's either yesterday's coffee or that guy two cubes upwind who's trying to put out his fiery data disaster. That you well know could have been prevented in the first place.

Call 1-800-628-4777.

To keep data loss from casting a glow on the office landscape, call 1-800-628-4777 ext. 9FFG. If you own Norton Utilities and SAM, you can order upgrades for $39.95 and $29.95 respectively.* Or you can purchase the new versions at your software store.



SYMANTEC.®

registered trademarks of Symantec Corporation. All other trademarks or registered trademarks are the property of their respective holders. ©1994 Symantec Corporation. All rights reserved.

Reviews

Quadra 630

Macintosh Computer

PROS: Inexpensive; good performance; basic AV capabilities included. **CONS:** Sound input and output limited to 8 bits; no video-memory expansion; single slot for system RAM expansion. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** $1279.

MW ★★★★

KEVIN CANDLAND

THE QUADRA 630 MAY BE THE LAST of the 680X0-based desktop Macintoshes and one of the best entry-level Macintoshes ever. Not only is the Quadra 630 affordable, but its performance rivals that of more expensive Macintoshes like the Quadra 800 and 950. The machine also has enough expansion slots for add-ons to make it a multimedia whiz, and it is upgradable to a Power Mac.

Apple estimates the street price of the basic Quadra 630 (4MB of RAM and a 250MB hard disk) to be around $1279, but has no estimate for a fully equipped machine. My guess is that a Quadra 630 with 12MB of RAM, a 300i double-speed internal CD-ROM drive, an Apple TV/Video System, an Apple keyboard, and a 14-inch monitor will be about $2400.

The Quadra 630's case is a completely new design. Its footprint is about the same as that of a Power Mac 7100/66, but the 630 is not as tall. In addition to a power-on light, the 630's front panel has a headphone jack, volume-control buttons, and a remote-control sensor (a good feature for TV channel-surfing and audio-CD track selection). The back panel includes the usual ADB port, printer or AppleTalk port, SCSI port, speaker and microphone jacks, and video port. There are also a few knockout panels that allow you to plug connectors into an optional PDS card or the TV/Video System interface.

The Quadra 630 is built for easy expansion and has a slide-out motherboard (a feature made popular by the Color Classic). To access the motherboard, just snap off a plastic panel and remove two screws on the back of the case; you can then pull the motherboard out easily. The motherboard shows an extremely low chip count due to the highly integrated chip set.

In the center of the motherboard is the 33MHz 68040—the same chip used in the Quadra 650, 800, and 950. The motherboard also sports an LC III–compatible 68030 PDS that accepts most of the cards designed for LC III–style machines such as the Quadra 605 and the LC 575. Memory expansion beyond the barely usable, standard 4MB is limited to a single SIMM slot. The Quadra 630 can be expanded to a total of 36MB of RAM—if you can afford the over-$1000 32MB SIMM.

The motherboard also sports a communications slot, first introduced with the LC 575 series, for either a fax modem or Ethernet module. There is a video-in slot for the optional Apple AV Card, which allows audio and video digitizing, and a connector for a TV-tuner card that supports both broadcast and cable TV. With the optional Apple TV/Video System setup ($249), you can now watch the Sci-Fi Channel and work on your spreadsheet at the same time. You can expand the TV window to full screen when something interesting happens, capture a still frame, or record the whole scene as a QuickTime movie. The AV card allows you to digitize video at a rate of up to 15 frames per second at a window size of 160 by 120 pixels, or 7 fps with a 320-by-240-pixel window. Although not considered high quality by today's standards, the frame rate is adequate for beginners who want to learn more about digitizing video.

Unfortunately, there is no slot on the Quadra 630 motherboard for additional video memory—the video DRAM is limited to 1MB built into the video-display ASIC. The video DRAM does, however, support a monitor at 832-by-624-pixel resolution in 8-bit color depth, or at 640 by 480 resolution in 16-bit color depth. The only way to get 24-bit color is to use a third-party video board that plugs into the LC III–style PDS. It would be nice to have an optional video-memory slot so you could get 24-bit color depth on a 14-inch monitor or 16-bit or better color depth on a 16-inch monitor.

Despite all the optional AV goodies, the Quadra 630's built-in sound is only 8-bit stereo in/out—not the 16 bits of the other AV Macs and the Power Macintoshes (16 bits is the standard for professional CD-quality sound). Whenever you use your microphone through the microphone jack or play a recorded sound, you have only 8-bit audio resolution. Fortunately, CD playback is 16-bit. If you really need to input editable 16-bit sound, you can add third-party hardware or software. Unlike the other Quadra models, the 630 doesn't come with a microphone; you can only use a PlainTalk-compatible microphone.

For Macintosh aficionados, here's a surprise: instead of sticking to the SCSI storage standard synonymous with the Macintosh, Apple used an internal IDE (Integrated Device Electronics) drive common in PC clones. However, this means that standard third-party formatting software such as FWB's Hard Disk Toolkit doesn't work with the 630's internal drive. The only software for formatting the IDE drive is the formatter that comes with the 630's System disk. Fortunately, hard disk utilities like Central Point Software's MacTools and Symantec's Norton Utilities, and backup programs like Retrospect, work as expected. In Macworld Lab benchmarks, the internal IDE drive ran somewhat faster than a SCSI drive of comparable size. You can still attach SCSI devices externally if you have a spare drive. You can also replace the internal drive with a larger IDE drive, which is typically cheaper than the SCSI counterpart. According to Apple, almost all of the new IDE drives work with the Quadra 630.

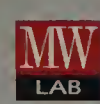
The Quadra 630, like all of the latest Apple products, is Energy Star–compliant. After a certain period of inactivity (you define the period via the CPU Energy Saver control panel), the machine shuts itself down.

Even though Apple markets the 630's 68040 microprocessor as a 66/33MHz chip, the CPU is the same 33MHz chip used in the Quadra 650, 800, and 950. Macworld Lab benchmarks show that the Quadra 630 is about as fast as the other 33MHz Quadras. Understandably, the Quadra 630 is not as fast as Power Macs running Power Mac–native software. If you are interested in the LC 630 and Performa 630 (which are available through the education channels and superstores), they should run just as fast as the Quadra 630 in tasks such as finding and replacing words, scrolling a document, or sorting a database file. However, the Quadra 630 is a lot faster than its LC and Performa counterparts at floating-point–intensive tasks like recalculating a spreadsheet or performing a Mathematica evaluation, since the Quadra 630 uses a full 68040, not the FPU-less 68LC040 processor of the LC and Performa 630 series. The FPU makes the Quadra 630 suitable even for business tasks.

Both the Quadra 630 and the Power Macintosh 6100/60 are marketed as entry-level machines, so a comparison between the two is inevitable. While the 6100 has PowerPC speed on its side, the 630 has a better price and more add-on flexibility. If you need performance, and Power Mac–native versions of your software are available, the 6100 is a better buy. However, if you don't intend to upgrade to native Power Mac software soon, if your favorite application is not yet native, or if you just want to experiment with multimedia production and development, the Quadra 630 is a better choice. The best part is that the 630 is upgradable to a Power Mac so you can always move up when you need to (Apple expects the upgrade to cost less than $500 and to be available in October). And if the performance of the Power Macintosh Upgrade Card for the Quadra 610, 650, 800, and the 900 series is any indication, the Quadra 630 with the upcoming upgrade card should run at least as fast as a Power Macintosh 7100/66. As an additional benefit, the upgrade card can be switched back to 68040 mode so that nonnative applications run at full speed. Finally, the Quadra 630 costs less than the 6100/60; the cost of the Power Macintosh Upgrade Card makes it only slightly more expensive than the base 6100 by about $100 to $200.

The Last Word

Usually entry-level machines lack speed or expandability. Not so in this case. Even with the video- and system-memory expansion caveats, I highly recommend the Quadra 630. If the Quadra 630 is any indication of future entry-level machines from Apple, I can't wait for one that's based on the Power PC.—MARK HURLOW



Quadra 630 with FPU Compared with Other 680X0 Systems

CORE-PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

BUSINESS-SYSTEM PERFORMANCE TIMES

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of systems for different types of real-world tasks. For each type of system, results can be compared with other *Macworld* Business-System Performance Times.

Best result in test. Products are listed in decreasing order of overall performance.

	Common	Scientific	Processor	Drive Access	Video Display	Floating Point
	Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display.	We added to the common tasks several scientific calculations (which use floating-point math).	Several tasks in Adobe Photoshop, Aldus FreeHand, Excel, Word, Claris FileMaker Pro, and QuarkXPress.	File-opens in Photoshop, Excel, and Word; and disk-based sorts in FileMaker Pro.	Vertical scrolling in Excel, Word, and QuarkXPress.	Scientific recalculation (which uses floating-point math) in Excel and 3-D rendering in Infini-D.
Quadra 840AV	16.5	28.8	118	59	49	59
Quadra 800	16.4	26.8	129	54	52	70
Quadra 630	15.4	24.7	138	51	63	77
Quadra 950	14.7	24.6	135	58	60	76
Quadra 650	14.6	24.9	136	57	53	74
Quadra 660AV	12.4	21.4	170	67	63	84
Quadra 610	12.1	20.9	167	60	63	91
Quadra 605	10.3	10.8	171	62	64	88*
IIci	4.9	9.2	467	111	173	200

*Results for Infini-D rendering not factored in due to lack of FPU.

MiniCad 5

CAD Software

PROS: Fast; easy to use; customizable interface; excellent architectural tools; inexpensive. **CONS:** Lacks some mechanical- and civil-engineering tools. **COMPANY:** Graphsoft (410/290-5114). **LIST PRICE:** $795.

MW ★★★★

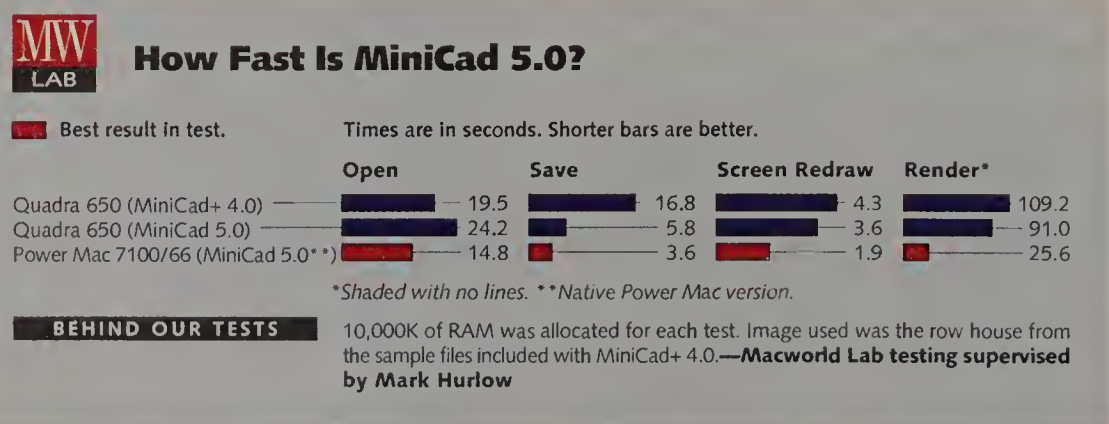
GRAPHSOFT, ONE OF THE pioneers in bringing CAD to the Macintosh platform, is now among the first to introduce a Power Mac–capable two- and three-dimensional CAD software package. Architects, engineers, and industrial designers are well advised to look into MiniCad 5. For a suggested retail price of $795, it includes features normally found only in high-end packages, such as Autodesk's AutoCAD, Graphisoft's ArchiCAD, or Intergraph's MicroStation Mac, all of which list for well over $3000.

MiniCad 5 is a general-purpose 2-D and 3-D CAD package, but it's well adapted for the architectural, engineering, and construction industries. In addition to offering the accuracy these professions require (up to nine significant digits), MiniCad 5 includes autodimensioning, unlimited layers, a built-in spreadsheet, a database for tracking costs and bills of materials, and the MiniPascal programming language for building custom CAD applications (you can use C++ if you prefer). And because MiniCad 5 can import and export files in DXF, it lets you exchange drawings with other CAD programs and modelers.

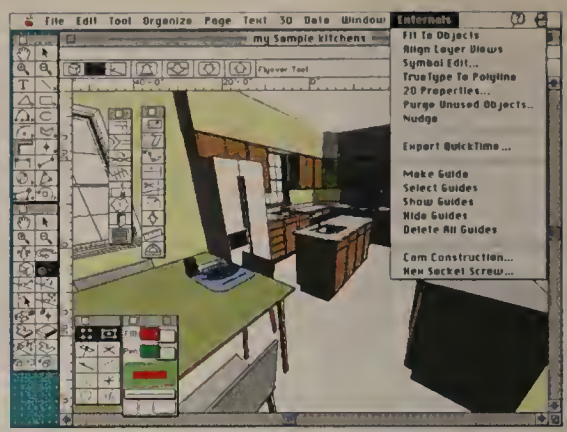
MiniCad 5's unique layer-linking capability allows you to treat multiple layers as if they were one. For example, you can link an elevation layer in a 3-D model to a floor-plan layer; then, any changes to the floor plan will appear in the elevation layer. If you assign a height (or z value) to a layer, objects created on that layer automatically show up in correct proportion when you switch to a 3-D view. You can also organize drawings by categorizing objects in classes that operate across layers. For example, you can put your lighting fixtures into a class even if they are scattered throughout the drawing; with one command you can then hide or show these fixtures.

In addition to the hundreds of architectural, mechanical, electrical, and design symbols that MiniCad 5 includes, third-party developers have released numerous discipline-specific symbol libraries for MiniCad, such as collections for classic furniture and kitchen design. You can edit symbols either individually or globally, if for instance, you place a six-panel door symbol in a number of rooms and later decide you want eight-panel doors throughout. This capability can save you a lot of time and frustration.

Like previous releases of MiniCad, version 5 has a "smart cursor" that shows you exact locations of possible snap or target points, letting you draw or modify objects precisely. The smart cursor, which changes shape depending on its location on a selected object, helps you perform certain operations or display information about that object. For example, move the cursor over the handles of a selected rectangle, and the cursor becomes a pair of calipers that calculates the rectangle's area and perimeter. MiniCad 5 also retains the "smart wall," which cuts an appropriate opening when you apply a symbol (such as a door) to it, and heals itself if you remove the symbol.



Besides Power Mac–native operation, MiniCad 5's major enhancements are the addition of externals, which are specialized tools and menu items geared toward a specific profession or discipline, and an OverlayEdit utility, which lets you add the externals to MiniCad's menu bar. You can select these custom environments from a menu and organize a group of externals into a module. Both of these additions allow you to customize the program to fit your particular requirements.



Into the Kitchen MiniCad 5 lets you simulate the experience of flying through 3-D space and capture the flyby as a QuickTime movie.

While MiniCad 5 lets you customize its interface with externals, it also includes three professional modules: architectural, mechanical, and advanced design. These modules are collections of tools, menu items, symbol libraries, and templates particular to a discipline; they can simplify your tasks and increase your productivity. For example, the architectural module provides tools for creating parametric symbols, so you can enter certain parameters to create, say, a door or window symbol. The module also includes tools for making linear and angular measurements, laying out parking lots, indicating revisions, and editing or duplicating symbols.

The mechanical-engineering module provides tools for creating 3-D objects, such as cams, gears, screws, and bolts. The property-display function calculates an object's area, perimeter, centroid, and moment of inertia. The module lacks some important features for mechanical designers, such as solids modeling and volume calculations; and civil engineers will be frustrated by the absence of terrain modeling and other features.

MiniCad 5's advanced-design module is useful in various disciplines. It enables you to create QuickTime movies of motion around 3-D objects, so you can create walk-through and flyby animations that any QuickTime player can run.

The Last Word

Compared with high-end CAD programs, MiniCad 5 is admirably easy to learn. Along with excellent printed manuals, it ships with a CD-ROM that contains an interactive tutorial and an electronic reference of MiniCad tools and commands. If you are new to CAD on the Macintosh or have used other CAD programs, you should be a MiniCad master after a few hours of practice with the expanded tutorial. MiniCad 5 is excellent CAD software offering major performance for the price.—FAYEQ S. OWEIS

Dabbler 1.0

Art-Education/Paint Software

PROS: Excellent features for the price; supports pressure-sensitive pen input; fast; low memory requirements; native Power Mac version available. **CONS:** Unsatisfying results with mouse input; recorded lessons are of questionable value; no transparency controls; idiosyncratic interface requires some learning. **COMPANY:** Fractal Design Corporation (408/688-5300). **LIST PRICE:** $99.

MW ★★★

FRACTAL DESIGN'S NEW PAINT program is notable right off the bat for a number of reasons. First, version 1.0 is available for both Macintosh and Windows platforms as well as for Power Macs. Second, you get 16-bit color and a remarkably powerful paintbox for the price; and unlike Fractal Design's professional-class Painter, Dabbler is fast and responsive on LC- and Performa-class Macs. Third, Dabbler provides lessons from the well-known Walter Foster learn-to-draw series, both in the 50-page printed manual and in an on-screen tutorial.

Dabbler adopts the metaphor of a sketchbook on top of a drawing table that's fitted at the top with four drawers. Using a ⌘-*key* or clicking on a drawer front toggles each drawer open or closed with a satisfying snap. The tool drawer contains a simplified selection of the "natural materials" found in Fractal Design's other paint programs; the most recently selected tools display on the front of the drawer (whether open or closed), keeping them conveniently close at hand. Most tools give you the option of small, medium, and large points (as opposed to the professional tools' infinite variability); switching sizes produces an audible *ping*—a different pitch for each size. An "extras" drawer opens automatically whenever a selected tool has options or special effects to offer. The color drawer contains 16 customizable palettes, including 8 gradients. You can reverse each texture in the papers drawer with a click of the button, yielding 40 drawing surfaces.

Dabbler's operation is generally intuitive and easy to learn, but Fractal Design took some bold liberties with the interface that may confound seasoned Macintosh users. For example, ⌘-O does not open a painting but instead imports a graphic from another program (it works with PICT, TIFF, Adobe Photoshop, and various Windows formats). To work on an existing Dabbler painting, you open the tool drawer, click on the sketchbook icon, and page through until you reach the picture you want. Then when you close the tool drawer, the painting appears on the drawing table. Pictures save automatically to the sketchbook in Dabbler format; you can also save files in the common Mac and Windows graphics formats. To delete a work, just drag it off the open sketchbook and into the adjacent trash can; a pushpin inside the tool drawer lets you temporarily remove a page so you can reorder it in the sketchbook.

Other deviations from standard Macintosh conventions take even more getting used to. For example, in place of the Mac's familiar selection tools, Dabbler uses a series of stencil tools—rectangle, oval, star, heart, free-form, and polygon—and requires you to select a separate float tool to move a selection. Additional stencil tools let you apply surface textures that you choose from the textures drawer, and you can also apply Photoshop filters. Dabbler has no line tool, but you can select Draw Freehand or Draw Straight Lines from the Options menu. Another oddity is that to apply gradients or text at an angle, you must use the page-rotate tool to turn your sketch. Finally, Dabbler makes good use of keyboard shortcuts, but there's still too much opening and closing of drawers for my taste.

The Invisible Hand Dabbler allows you to play back prerecorded sessions showing how an expert might draw a still life or a trio of singing cowboys, for example. You can then use the tracing-paper option to practice drawing the scene yourself. You can even record and annotate your own drawing process to produce lessons for others to follow.

Now, can Dabbler really teach you to draw? Just possibly.

First, don't be fooled by the old-fashioned Walter Foster sketches. If you faithfully practice the follow-along drawings in the manual's instructional pages, you might just achieve some commercial-art skills. True, the woman's profile looks suspiciously like that of a young Greta Garbo, and the perky bunny looks like Disney's Thumper, but this lends the lessons a measure of charm and whimsy. No matter what drawing style you ultimately develop, the content of Foster's lessons is genuinely useful and applicable: rules of proportion and perspective, advice on sketching with pencil or charcoal before proceeding to ink—and some words of encouragement as well.

On the other hand, while it's entertaining to watch sample drawings take shape before your eyes, I question the value of the recorded sessions that you can play back (frame by frame or at full speed) via VCR-type controls. If you're quick, you'll see the icons change when a new tool is selected, and some drawings have captions explaining the operations currently under way. But I didn't find it useful to watch the disembodied lines accrue on the page.

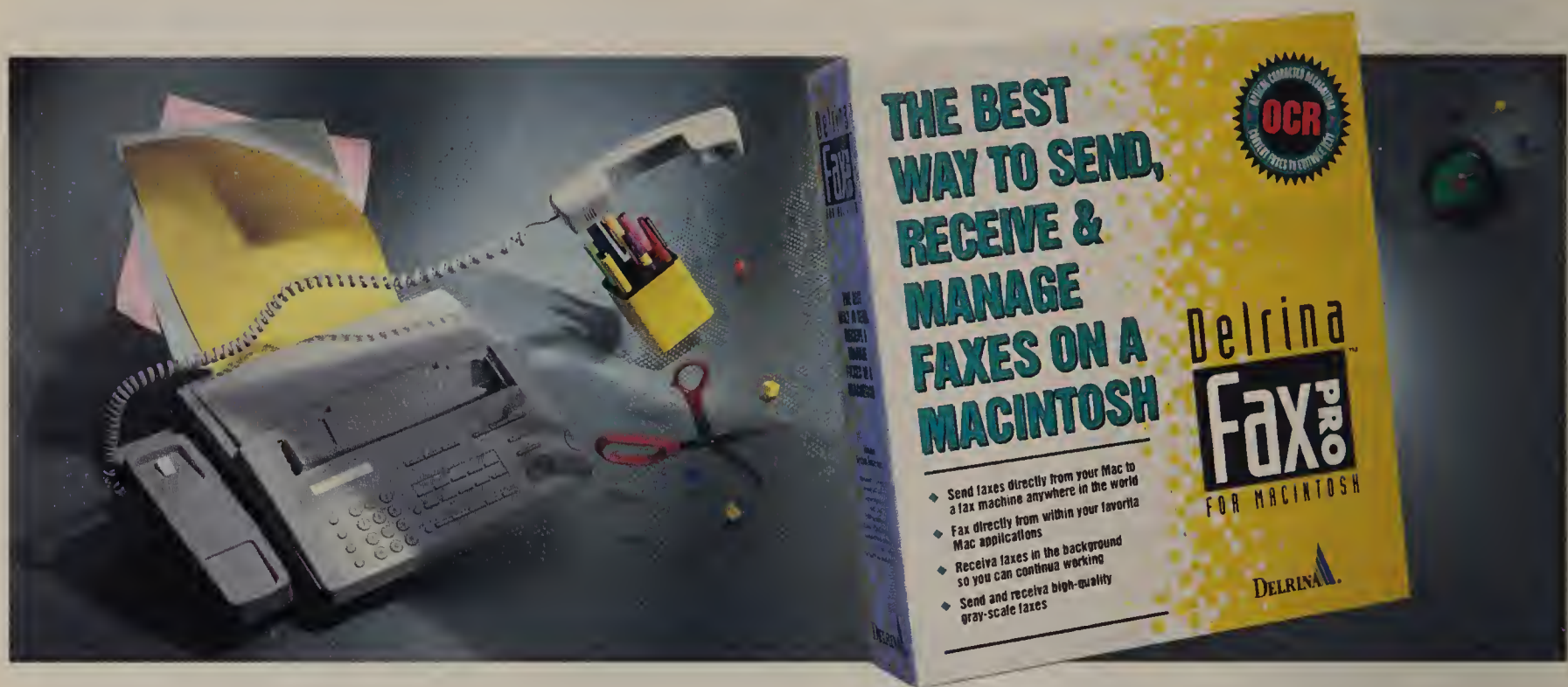
More significantly, perhaps, the Walter Foster drawing system was designed for natural materials—chalk, pencil, and so on—not electronic paint programs that emulate natural materials, and not all the techniques are transferable to the digital sketchpad. Whether you draw with the mouse (which I don't recommend) or with a pressure-sensitive stylus and tablet, the physical act of sketching on screen requires a different kind of hand-eye coordination from that needed for sketching on paper. Dabbler does a good job of re-creating the appearance of, say, charcoal on a toothy paper, but once on screen, pixels are pixels: it's hard to erase your pencil guidelines and leave only the ink-brush lines.

The manual is divided into two sections, one on the Dabbler application and one on the Foster lessons. The Dabbler portion does a fine job of introducing the program's tools and interface, but lessons on digital painting techniques would be helpful, especially when it comes to Dabbler's admirably advanced features, including its ability to acquire images directly from scanners, its autocloning capability, and a tracing-paper mode.

The Last Word

Whether you opt to study the Walter Foster drawing method or go it alone, the key to artistic skill is practice, practice, practice. By providing an excellent paint set with an appealing if slightly quirky interface at a great price, Dabbler makes it easy to stick with the program.—MARJORIE BAER

Introducing Delrina Fax PRO™ for Macintosh. You'll wonder how you ever faxed without it.



Now you can use your Mac to send, receive and manage faxes – thanks to new Delrina Fax PRO for Macintosh.

With Delrina Fax, sending faxes is as easy as printing a document – and you can fax directly from any Mac application. Simply select Delrina Fax in your File menu, type in a name and number – or choose a name from the built-in address book – then click on the "Send" icon and your fax is quickly on its way.

Don't try this with a fax machine.

Delrina Fax also delivers stunning 16-shade gray-scale sharpness and clarity on-screen, as well as to any fax machine or printer. And, since it works in the background, you can send and receive faxes without leaving the application you're working in and designate faxes to print automatically on receipt.

Delrina Fax automatically keeps a detailed log of all the faxes you send and receive, and it has built-in Optical Character Recognition (OCR) that lets you easily convert your faxes with text into documents that are ready to be edited. There's even a custom scheduling feature that allows you to schedule long distance faxes when phone rates are lower.

Delrina Fax gives you detailed information about your faxes. Viewing, printing, resending and deleting faxes are a mouse-click away.

Support that can't be beat.

Delrina Fax supports all fax modems for the Mac, as well as all Powerbook Express™ modems and AV GeoPort Telecom™ adapters. And installation is virtually automatic.

With over 4 million fax products sold worldwide, and industry-acclaimed tech support, Delrina is the leader in the fax software market. To put this experience to work for you, call the number below and order Delrina Fax PRO for Macintosh today. Once you do, you'll wonder how you ever faxed without it.

DELRINA
1-800-268-6082

Delrina and Delrina Fax PRO for Macintosh are trademarks of Delrina (Canada) Corporation. Macintosh is a registered trademark of Apple Computer, Inc. All other product names are trademarks of their respective owners. © 1993-1994 Delrina (Canada) Corporation. All rights reserved.

Circle 137 on reader service card

Apple Personal Diagnostics

Hardware-Diagnostics Utility

PROS: Tests and repairs disk directories; provides system information and benchmark tests; extension performs diagnostics during idle time; manual includes some useful tips and charts. **CONS:** Some features weak or missing; poor interface; inadequate manual; of limited use to most users; lacks emergency disks for many Mac models; incompatible with Power Macs; overpriced. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** $129.

MW ★★

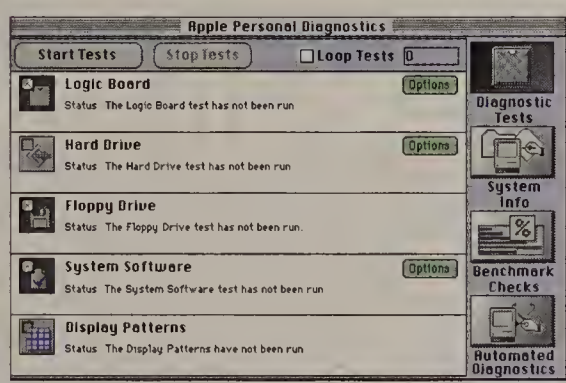
APPLE PERSONAL DIAGNOSTICS (APD) focuses on diagnostics for Mac hardware components. Given Apple's obvious advantages in this field, APD should be a winner. However, in trying to make a hardware-diagnostic tool for the rest of us, Apple has come up short.

Apple starts off on the wrong foot by omitting two emergency start-up disks. If you need an 800K disk, or if you own a Centris or Quadra 610, 650, 660AV; Quadra 800 or 840AV; a Macintosh TV; or a Workgroup Server 60 or 80, you need to order a $10 disk—which is not mentioned on the box. And APD 1.0 isn't compatible with the Power Macs, though version 1.1, shipping soon, will be. APD consists of an application and an Automated Diagnostics extension.

The Diagnostic Tests window presents check boxes for five sets of tests: Logic Board, Hard Drive, Floppy Drive, System Software, and Display Patterns, each of which you can optionally loop. Alas, APD has no preferences feature; relaunching resets all options to their defaults. And those options are limited. You cannot isolate logic-board components or individual System Software tests, for example. (It's worth noting, too, that Disk First Aid, included with the Mac system, provides the same functionality as APD's System Software tests.)

If your Mac passes all APD's tests successfully, a "Test Passed" message flashes on screen. But some tests are not thorough. For example, the floppy drive test accepts either an 800K or 1.44MB disk, rather than asking for both. Testing both encoding methods is essential to checking a SuperDrive. On one disk I used, APD locked out bad sectors during the verification test yet passed the drive without comment. Reinitializing the disk in the Finder yielded no media errors, but APD repeatedly locked out sectors—without ever notifying me. APD should have suggested that I retest with another floppy disk to see if the error was due to a bad disk or a problem with the drive or my software. In this case, the problem was not a bad disk, so it could have been a dirty or malfunctioning drive—exactly what APD is supposed to find.

The System Info and Benchmark Checks features aren't the primary focus of APD, but even so, superior software alternatives are available as freeware and shareware. System Info—which tells you what Mac you have, how much RAM is installed, the version numbers of parts of the installed System software, information on installed extensions and applications, and a few details about SCSI devices—is useful but limited and inflexible. For example, Control Panels and Extensions Info gives the names and versions of installed extensions but not info on RAM usage, size of disk, traps patched, load order, disabled extensions, and so on. APD's SCSI and slot information is similarly skimpy; for example, the slot info covers NuBus but not the PDS.



Apple Interface Diagnostics The main application window offers four diagnostic selections.

There are three math tests (integer, complex, and FPU); two speed tests (memory and CPU); one video test (which does not cycle through all bit depths); and a quick, generic read/write hard drive test that's too short to provide any reliable data and cannot be set to run multiple iterations and obtain an average. Without more control and detail, plus the ability to save, annotate, import, and export records, APD's benchmark checks aren't useful or meaningful.

The Automated Diagnostics extension (which requires System 7) performs a subset of the diagnostic tests during idle time. You configure Automatic Diagnostics from within the application; a control panel would have been a more convenient way to enable or disable the extension (you can't choose individual tests), set the idle-time threshold, and choose the way it notifies you that testing is active. Last, a status field reports when tests were last run and whether the system passed or failed. Vexingly, APD clears that field any time you restart your Mac or run tests within the application.

To get specifics on problems that APD detects, you must create a report. Reports are highly configurable, but they're in a proprietary file format and can't be exported to text or pasted into another program. The Help window presents cursory, context-sensitive descriptions of control items. All the documentation is in the slim manual.

More significantly, the manual is uneven. The troubleshooting chapter gives explanations and responses for all APD error messages, but inexplicably recommends rebuilding the Desktop if the logic-board or RAM tests fail. An excellent section on SCSI termination and troubleshooting is preceded by references to drives being removed after launching the program, as if detaching SCSI devices with the Mac turned on were acceptable. While the manual suggests using third-party utilities for repairing directory damage, when it addresses lost folders and files it makes no mention of data-recovery utilities or services; instead, it suggests that you back up what you can and reformat. It has tables on RAM, VRAM, and card slot upgrades, but no tables of sad-Mac or system error codes.

The Last Word

The real question is, Do you need this type of program at all? For most users the answer is no. Most computer problems aren't due to hardware component failure, and those that are generally (1) are obvious enough to diagnose without software, (2) are severe enough to prevent you from running diagnostic software, or (3) involve hardware not checked adequately or at all by APD. The Mac already runs a thorough self-diagnostic test at every start-up and checks most of the things that APD checks—that's what the happy-Mac symbol means.

If Apple had provided a solid, versatile utility with an elegant interface and extensive documentation, I'd have recommended it. Such a program could be useful for everyone from advanced users to consultants and system administrators. Sadly, APD is not such a program, and it's just too pricey for the novelty of having your FPU checked in the background.
—PETER STOLLER

When you give us one of these,

Change won't be all you'll get back.

FileMaker Pro for Mac. The original and still the best
NOW FOR ONLY $99!*

CHANGE IS GOOD. There's no need to wait any longer. Own the best selling database program for the Mac at the unheard of price of only $99 ! That's a 60% savings off the average price of $275. But what you'll get is more than a great deal.

IMAGINE IT. MANAGE IT. What do you need to get done? FileMaker® Pro software can do it!
Invoicing, mailing lists, business reports, purchase orders, project tracking and so much more. Just about any task you can imagine, FileMaker Pro will manage.

SIMPLY POWERFUL. SUPERBLY PRICED. There is only one database manager that gives you so much power, so simply. Even if you are a first-time database buyer, we'll have you up and productive in minutes. At a cost that will hardly make a blip on your bottom line.

PLEASE DON'T DELAY! Did we mention that this $99 special offer is available only through December 31, 1994? Move quickly, manage completely, buy intelligently. FileMaker Pro for the Mac, the original, and still the best.

Visit your nearest software reseller or call 1-800-544-8554 ext 400

MacWorld (World Class Award) 1994

MacUser (Editors' Choice) 1991

Home Office Computing (Editors' Pick) 1993

Simply powerful software.™

* The $99 price is a suggested promotional retail price available only in the U.S. until December 31, 1994 and may not be valid with any other special offers. The suggested retail promotion price in Canada is $149. ©1994 Claris Corporation. All rights reserved. Claris, Filemaker and the Filemaker design are registered trademarks. Simply Powerful Software is a trademark of Claris Corporation.

ScanPrepPro 1.2

Photoshop Add-on

PROS: Automates scanning and image correction; incorporates understanding of image reproduction and Photoshop tools; excellent reproduction of previously screened images. **CONS:** Somewhat unstable; line-art mode doesn't use sharpening; doesn't correct for color shifts and casts. **COMPANY:** ImageXpress (404/564-9924). **LIST PRICE:** $695.

MW ★★★

DOES THIS DESCRIBE YOU? YOU'VE got a scanner. You've got Adobe Photoshop. The tools are there for producing top-quality scanned images, but you're not getting them. Gray-scale and color scans are muddy, dark, and blurry. Line art is jaggy. Scans of halftoned images are unusable. And you spend extraordinary amounts of time producing scans you're not happy with.

A solution might be to buy ScanPrepPro—a Photoshop add-on that automates the scanning and image-massaging process. ScanPrepPro actually takes over Photoshop, employing a wide variety of Photoshop's tools to work with a wide variety of scanned images. And it has a lot of built-in smarts that help it gauge what adjustments images need for superior reproduction and how to use Photoshop's tools to achieve that end.

ScanPrepPro can set resolution and image size (including any resampling required for the target screen frequency), tonal correction (adjusting the range of grays or colors via Photoshop's Levels control), sharpening (using an intelligent approach to the Unsharp Mask filter), pattern removal for previously screened images (as much as that is possible), and threshold adjustment for line-art scanning. ScanPrepPro works with scanners, Photo CD, laser printers, imagesetters, and continuous-tone printers—with optimized settings for each.

ScanPrepPro can control some scanners directly, via their Photoshop Acquire plug-ins. (If your scanner isn't supported directly, ScanPrepPro tells you what settings to plug in manually. Or you can open any image in Photoshop and then tell ScanPrepPro to work its magic on that image.) The ScanPrepPro Calculator sets up all the scanning parameters, prompting you to select the area to be scanned. When the scanning is finished, you select the ScanPrepPro Agent, which goes through the rest of the image-correction steps.

ScanPrepPro has modes for scanning line art, gray-scale images, and color images, with a lot of options for each. With gray-scale images, for instance, you can specify that the image has a full range of grays and that there are specular highlights (like reflections from chrome). When you work with images that are mainly, but not entirely, black and white, ScanPrepPro's dropout feature keeps the blacks and whites true while retaining subtle gray details—always a challenge.

ScanPrepPro doesn't do the best tonal correction on previously scanned images; a skilled Photoshop user can do better. But when ScanPrepPro controls the right scanner (an Agfa or a La Cie SilverScanner, for instance), it can do an excellent job of tonal correction.

ScanPrepPro does not address some of the real bugaboos of color-image correction such as tonal shifts, color casts, and the like, but it does nicely in most other areas—notably separation.

ScanPrepPro's line-art mode doesn't use sharpening, which greatly reduces the quality it can provide. This is surprising, since its Copy Dot mode (designed to reproduce previously screened images dot for dot—essentially capturing them as line art) does use sharpening and provides the best results I've seen. The solution is to use Copy Dot for all line-art scanning.

While ScanPrepPro's single dialog box is a model of simplicity and functionality, the program itself is something of an octopus. For example, disabled menu items can still affect what's happening. Sometimes the process of jumping in and out of dialog boxes, choosing options, and tweaking settings stops inexplicably, resulting in a crashed Mac (this happened more than once with all system extensions off). And you sometimes need to remind ScanPrepPro to accomplish simple things—like copying the dimensions of an already scanned image.

ImageXpress updates ScanPrepPro constantly, which can be an annoyance. The previous version worked fine with the Hewlett-Packard ScanJet, for instance, but version 1.2.3 doesn't, and it's not clear how long we'll have to wait for that particular fix. However, the company's unlimited free tech support (albeit on a toll line) does a great deal to obviate that problem.

The Last Word

ScanPrepPro is not perfect, but it goes a long way toward automating a process that can be confusing, difficult, and time-consuming. ScanPrepPro produces good results—sometimes better images than could be produced by any but the most skilled operator.—STEVE ROTH

LogoMotion 1.0

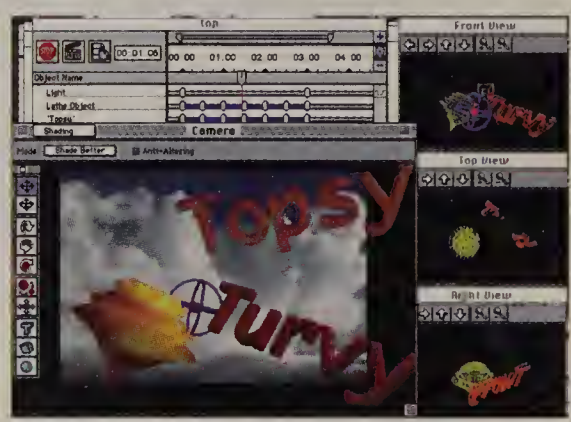
Animation Tool

PROS: Affordable price; approachable 3-D tools; provides animation plug-ins. **CONS:** Middle-of-the-road rendering tools. **COMPANY:** Specular International (413/253-3100). **LIST PRICE:** $149.

MW ★★★★

IF YOU DON'T NEED PROFESSIONAL-level 3-D tools, or you simply want to dabble in 3-D, take a look at LogoMotion, an easy-to-use 3-D package that's eminently affordable. As its name suggests, LogoMotion is designed to facilitate the production of 3-D flying logos, like those from TV-movie-of-the-week titles. LogoMotion enables you to extrude text objects from TrueType and PostScript Type 1 fonts, apply surface textures to the objects, construct animated sequences, and render finished images.

But LogoMotion is more than a type extruder. It offers enough modeling, rendering, and animation power to make it a decent all-around 3-D package for budget-conscious graphic designers, entry-level users, and budding animators.



Flying Made Easy LogoMotion is designed for creating flying logos but can also serve as a general-purpose, entry-level 3-D modeling and animation program.

LogoMotion derives from Specular's Infini-D but emphasizes simplicity. For example, LogoMotion offers front, side, and top views, plus one camera view. The resizable camera-view window is the main work area; the other fixed-size views are for orientation. And LogoMotion's palette holds only text, lathing, and extrusion tools, along with object-manipulation and -scaling functions.

LogoMotion keeps Infini-D's Workshop feature, which lets you edit the outlines of lathed and extruded objects, as well as edit EPS outlines imported from Aldus FreeHand and Adobe Illustrator.

continues

With A Little Imagination, You Can Use DOS And Windows Files.

Apple is bundling MacLinkPlus with the new Powerbooks because of its ability to translate files. Maybe you should consider buying MacLinkPlus for your Macintosh®

With MacLinkPlus, You Can Use Them On Your Mac.

A lot of products will let you move PC files onto your Mac. But only MacLinkPlus™ will let you actually use them with formatting and graphics intact. Across platforms. Across applications. Just double-click on virtually any word processing, graphics, spreadsheet or database file and MacLinkPlus will automatically convert it into your favorite Mac application. And, with a simple drag and drop, MacLinkPlus will also convert your Mac files into DOS and Windows formats. After all, there are many things you can do with PC files. But wouldn't you really rather use them for what they were intended with MacLinkPlus?

World Class Winner Macworld

Call 800-780-1466 For More Information.
Ask about multi-packs, site licenses and our Windows version.

DATAVIZ™
THE DATABRIDGE SPECIALISTS

Circle 79 on reader service card

All product names are trademarks or registered trademarks of their respective holders. ©1994 DataViz, Inc. 55 Corporate Drive, Trumbull, CT 06611 (203) 268-0030 FAX (203) 268-4345

LogoMotion supports publish and subscribe, so editing EPS outlines in the originating program automatically updates the 3-D model in the Workshop; it also imports objects in DXF and Swivel 3D formats. LogoMotion's modeling features are essentially equal to Infini-D's.

The same cannot be said for LogoMotion's animation and rendering tools, but its simplified animation Sequencer is more than adequate for the program's flying-logo mission. And LogoMotion includes important controls such as motion ease-in and ease-out, as well as some more-advanced animation features such as spline-based motion paths and the ability to morph both surfaces and objects. Overall, LogoMotion's animation capabilities strike a good balance between the sometimes contradictory demands of power and usability.

And LogoMotion makes it easy for novices to get started in moviemaking, by providing a useful assortment of StageHands—plug-in backdrops, cameras, environments, lights, and props—that automate the creation of animations.

LogoMotion comes with almost two dozen surfaces that you can edit for color, metallicity, reflectivity, and specularity, and from which you can create new surfaces and new surface libraries. The program offers two levels of rendering: a fast setting that generates flat shadings, and a better setting that produces images with reflections, fog, and environment effects.

LogoMotion can produce 32-bit renderings with alpha channels, even on Macs without 32-bit video. Generally speaking, images produced with LogoMotion aren't broadcast-quality, but they're perfectly adequate for graphic-design applications and corporate presentations. If you need better rendering, LogoMotion can export models to Infini-D for ray-tracing.

LogoMotion runs without a whimper. You know a developer is confident when the manual encourages you to learn the program by clicking about and seeing what happens. The manual itself is understandable and even fun to read. It could be a bit more thorough, but that might run counter to the theme of simplicity.

The Last Word

All in all, LogoMotion is a terrific program. It's great for creating quick flying logos for corporate presentations—its intended purpose. However, with its excellent balance of modeling, rendering, and animation features, LogoMotion may find just as much use as an entry-level 3-D package for nonprofessionals and maybe even the education market.

—CARLOS DOMINGO MARTINEZ

TeamFlow 3.1

TQM Flowchart Software

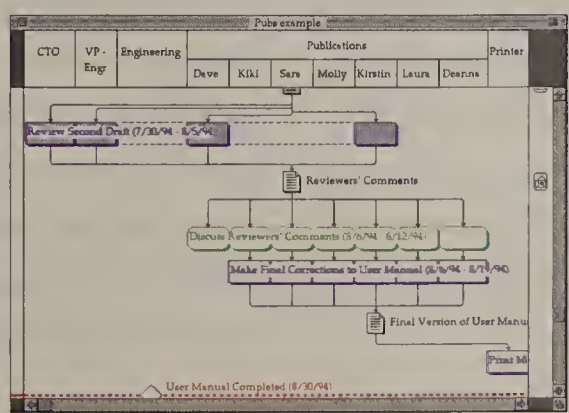
PROS: Clear diagrams; can attach documents to steps; includes departmental and team hierarchies; can diagram main processes and subprocesses. **CONS:** Simple Gantt chart; limited printing of reports; limited customizability of flowcharts and reports. **COMPANY:** CFM (617/275-5258). **COMPANY'S ESTIMATED PRICE:** $295.

MW ★★★

COMPUTER TOOLS TO AID MANAGERS in preparing TQM (Total Quality Management) projects are few and far between. TeamFlow lets you create special flowcharts, called process or deployment flowcharts, which show how tasks and reports pass from person to person and who has responsibilities at different stages of a project.

TeamFlow is easy to use. Since process flowcharts start with the team members, TeamFlow prompts you to first enter the names of the members of your team. The team database can consist of members' names and their positions in an organization chart or info such as address, E-mail address, phone number, and fax number. TeamFlow automatically draws the organization chart for the team.

Once you've created a team database, you use the work space to create flowcharts. Team members' names are displayed across the top of the work space. You add process steps to a flowchart by clicking on the work space beneath the person responsible for that step. When you click, a palette of possible process types—task, meeting, report, decision, or milestone—appears. You can add details such as start and finish dates, budgeted cost, and team leader. You can include other team members in the step by dragging the symbol for the step you've defined to the columns corresponding to the other team members.



Process Chart This section of a process chart shows steps in producing documentation for a new software product. Shaded items are already completed, while unshaded items remain to be done. The small icon to the right of the item labeled Reviewers' Comments indicates that an external document has been attached to that process step.

You can link process steps by dragging the cursor from one process step to the next. The program draws an arrow between the linked steps. If you have a decision point in your diagram and it leads back to a previous step, you can draw a feedback arrow, which is a dashed arrow rather than a solid arrow.

When you're dealing with any good-size project, your process chart is likely to get quite large and complicated. TeamFlow allows you to simplify the look of your chart by creating summary symbols, which when selected display new work spaces with additional details of a process.

If you include start and finish dates for each process step, TeamFlow also draws a Gantt chart to show you the sequence of events in the project. The Gantt chart doesn't include many of the features found in more complex project-management software; for example, you cannot customize the symbols on the chart or show allocated resources or slack times, as you can in Microsoft Project. But TeamFlow's Gantt chart gives you a reasonable idea of your project's schedule. You can also view a Gantt chart for just one phase of a project.

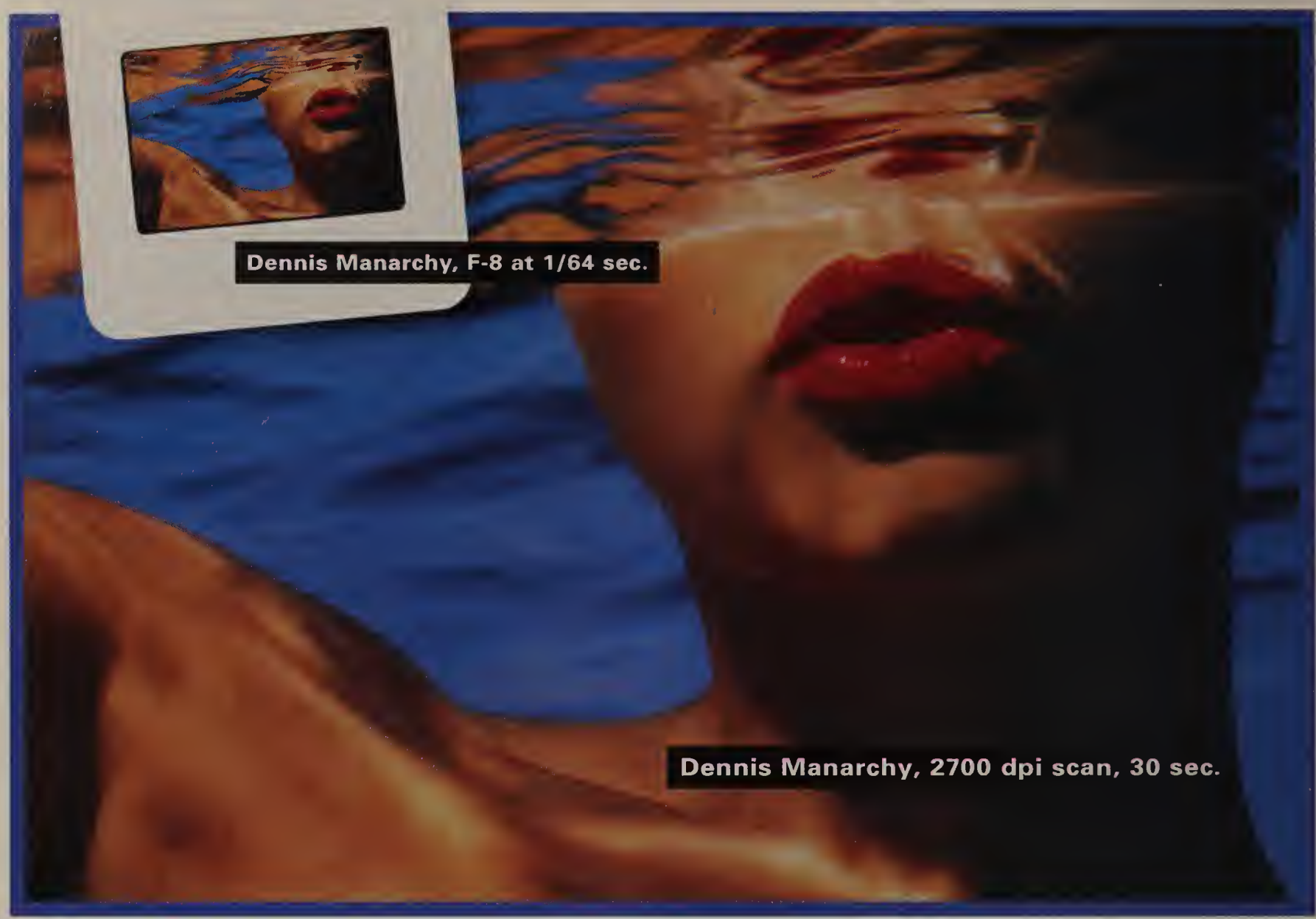
For tracking project costs, if you enter start and finish dates for a step, TeamFlow uses a linear earned-value algorithm to calculate the budgeted cost of the work performed, based on the current date. If you add the actual cost at some later time, the program also calculates the cost variance. However, the only way you can view the results is to open the description window for each process step individually. The total cost of your project and its variance appears in the program information window. There is no way to print a report of the project's budget.

You can attach documents to any process step. In keeping with the TQM approach, TeamFlow calls attached documents either quality standards or reference documents. Quality standards might be objective criteria that must be met for a decision point, while reference documents might be meeting reports. TeamFlow also provides for referencing hard-copy documents.

The Last Word

TeamFlow's strength lies in making it easy for you to plan, or dissect, your work processes, concentrating on the details of your work, not the details of the program. For that reason, it's a valuable business tool that I recommend—there is no other Mac program like it.—DAVE KOSIUR

The only thing missing is the wait.



New SprintScan 35 Slide Scanner from Polaroid — Brilliant Scans in Under a Minute.

Think of how much more high-quality scanning you'll be able to do at your desk. Or how fast you'll respond to high-volume or last-minute projects. Or even how soon you'll get home.

At under a minute per scan, the SprintScan™ 35 is 5 to 15 times faster than other tested slide scanners, with no loss of quality.* Scanning at resolutions up to 2700 dpi, it samples 10 bits per color (RGB) to deliver the best 24 bits. Which gives you a broader range of colors and better shadow detail. And at only $2,495,† SprintScan 35 won't change the color balance on your bottom line.

Just drop in the slide (positive or negative), point and click. It's that easy. Automatic real-time color processing and image sharpening reduce the need for lengthy post-processing. And it's compatible with both Macintosh and Windows.

The SprintScan 35 Slide Scanner — part of an exciting new line-up of electronic imaging systems from Polaroid.

Don't waste another minute!

For more information call today, 1-800-816-2611 ext. 965.

SprintScan 35 scans slides at 2700 dpi in under a minute.

Polaroid®

* Source: Evaluations by Rich and Associates, June 1994. † Suggested list price. Actual purchase price may vary. "Polaroid" and "SprintScan" are trademarks of Polaroid Corporation.

Circle 295 on reader service card

First Things First Proactive 1.1

Scheduling Program

PROS: Outline view; event-entry templates; items are easy to reschedule. **CONS:** Events in adjacent months are hidden; no text wrap in monthly calendar; no contact-manager links. **COMPANY:** Visionary Software (503/246-6200). **LIST PRICE:** $149.

MW ★★★

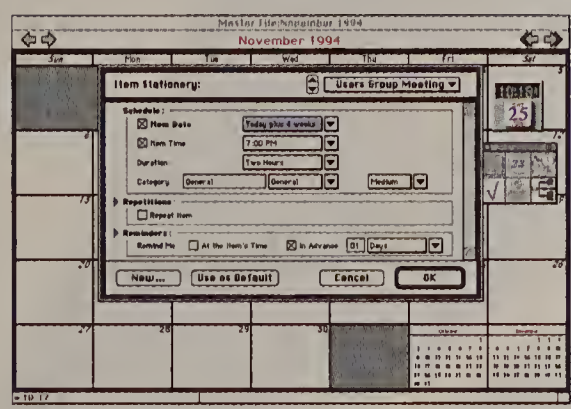
I'VE LOST COUNT OF THE NUMBER OF times the Mac has saved my life by alerting me to a crucial appointment. I've always liked First Things First (FTF) for basic reminders, but it lacked advanced scheduling features. With the release of FTF Proactive (FTFP), Visionary Software is trying to muscle in on its high-end competition by adding new features.

FTFP retains the standard version's handy clock that floats above the desktop. (If the clock gets in your way, you can dock it in the menu bar.) Double-clicking on the clock launches FTFP and automatically opens the default calendar file. The program provides a flexible suite of calendar views, with single-day, multiday, monthly, and yearly options (the weekly calendar is simply a multiday view with seven days showing). In the single-day and multiday windows, each day is divided into two sections, with untimed to-do items at the top and an appointment-book–style grid at the bottom.

FTFP's monthly calendar suffers from a few weaknesses. For example, events that fall in the visible portion of the preceding or following month don't appear on the current month's display. Although the software lets you jump to days in adjacent months by clicking on miniature calendars, I found the tiny dates almost impossible to read on my 13-inch monitor. A bigger problem is the lack of text-wrap capability in the monthly view. If you're not careful when entering an event's description, you could be left guessing about who you're supposed to meet, since some of the event's text may not show.

In addition to the standard views, FTFP lets you look at your schedule in outline form—a boon for people who find it easier to organize to-dos and appointments in a hierarchical format. The outliner accommodates up to 50 levels, which should be ample for even the busiest schedules. You can create events in the outline and drag them to the calendar to schedule them. Another handy option lets you assign project deadlines to FTF files, so you receive a warning when you try to book an item past the project's due date.

Unlike some other schedulers, FTFP doesn't distinguish between to-dos and appointments. When you post a new item, you have the option of entering a date and a start time or leaving the item unscheduled. You can also give an ending time to events that have a specific length. (Alas, there's no way to enter an item's duration directly.) You can assign items any one of four priority levels, and you can organize items into categories of your choosing; you can't, however, display categories in different colors the way you can with Now Up-to-Date.



Custom Event For frequently scheduled items, you can create Item Stationery templates with some fields already filled in.

FTFP sports a few other convenient features. For example, Quick Reschedule lets you move one or more events by a specified interval. I also like the way you can set reminders to appear both at and in advance of an item's scheduled time. Finally, if you find that you often book certain types of events such as lunch meetings, the program lets you create Item Stationery templates with many of the important details already filled in.

FTFP users can share schedules by hierarchically linking their calendars to master files on local or remote volumes. It's an unusual approach, but even new users should have little trouble getting up to speed in short order.

In an admirable effort to conserve resources, Visionary Software distributes the user's guide in the form of an Apple DocViewer file. However, the manual takes up almost 3MB on disk—a potential problem if space is tight.

The Last Word

All in all, First Things First Proactive is a capable performer that builds on the strengths of its predecessor. It's worth a look if you need a scheduling program and don't have to share information with a contact manager.—FRANKLIN N. TESSLER

Kekulé 1.1

Science Software

PROS: Near 100 percent accuracy, even on poor scans. **CONS:** Mac version missing features compared with PC version. **COMPANY:** PSI International (410/821-5980). **LIST PRICE:** $495.

MW ★★★

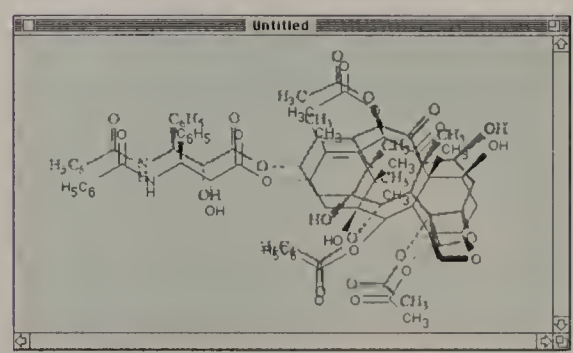
NOW, WHY DIDN'T SOMEONE think of this program ten years ago? Kekulé reads scanned chemical-structure drawings and interprets them, giving both a diagram for checking interpretation accuracy and a formal string representation of the structure. The need for an automated interpreter of structures has been desperate since the first appearance of computer chemical modeling. Let me explain.

In the mid-1980s, a number of firms developed the first practical chemical databases. These databases let users retrieve the chemical properties of a given molecule from a structure drawing or formula name; the databases could also be used as an inventory system. Inventory systems might sound trivial, but when the databases were actually implemented and lab notebooks converted to electronic files, some companies found to their dismay that in-house duplication of syntheses (that is, a chemist trying to create a compound that someone in the company had already made) ran a terrifying 30 percent.

The problem with these databases was that structural data had to be entered by hand. Companies hired platoons of data entry staff, who would sit at terminals drawing chemical structures, a tedious, time-consuming chore.

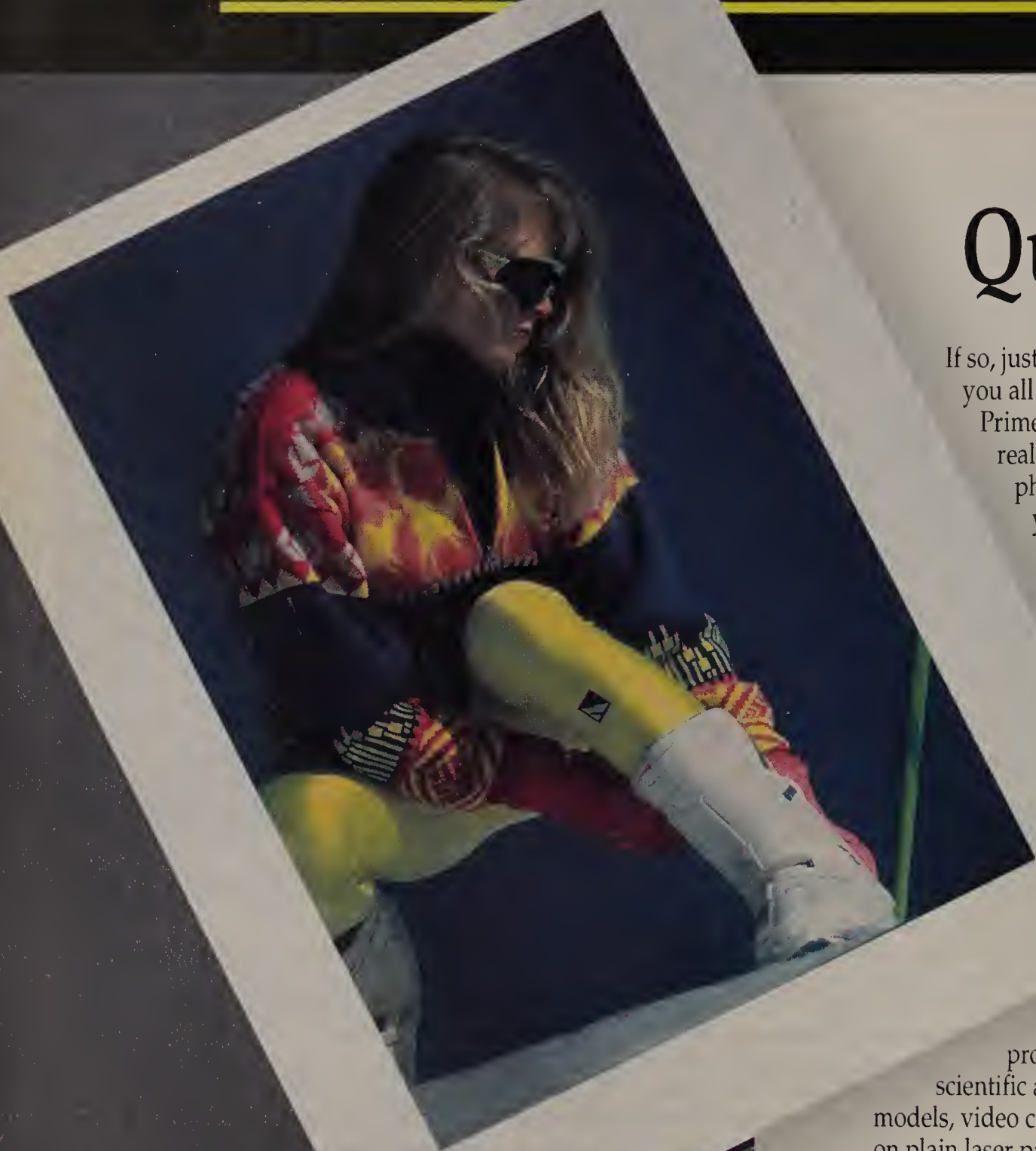
PSI, however, not only thought of automating structure-data entry but did a near-perfect job of implementing it. Kekulé is the chemistry equivalent of an OCR (optical character recognition) program—it's a utility that scans and interprets printed chemical structures. Since

continues



A Taxing Structure Kekulé interprets this slightly fuzzy scan of the structure of taxol correctly.

600 x 300 DPI. Dye-Sublimation. Wax Thermal Transfer. Just $1895!*



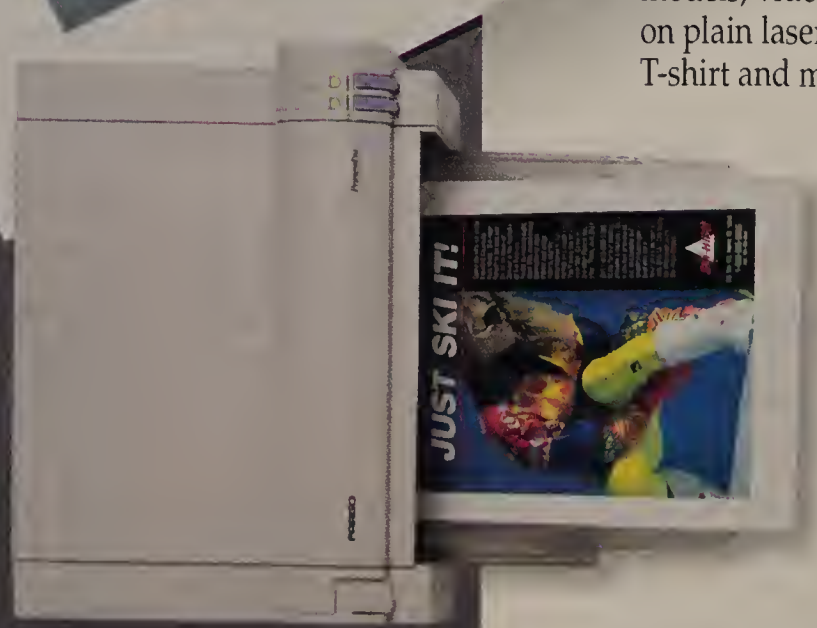
Any Questions?

If so, just call 1-800-327-4622. We'll tell you all about FARGO's incredible new PrimeraPro™ Color Printer. If you're really into graphics, electronic photography or digital imaging, you'll want to check out these specs:

- ☑ 600 x 300 dpi resolution – an industry first!
- ☑ Apple® LocalTalk® or parallel interface
- ☑ Optional Adobe™ Postscript™ Level 2
- ☑ Dual Dye-Sublimation/ Wax Thermal Transfer

PrimeraPro is the perfect color printer for all of your comps, proofs, layouts, photos, illustrations, scientific and architectural renderings, 3D models, video captures, and final artwork. Print on plain laser paper, transparency film – even T-shirt and mug transfers!

For more information and FREE sample output, call 1-800-327-4622.



DYE-SUBLIMATION PrimeraPro COLOR PRINTER THERMAL TRANSFER

FARGO®
ELECTRONICS, INCORPORATED

7901 Flying Cloud Drive
Eden Prairie, MN 55344 U.S.A.
1-800-327-4622
612-941-9470
FAX: 612-941-7836

Adobe PostScript

Primera and PrimeraPro are trademarks and FARGO is a registered trademark of FARGO Electronics, Incorporated. All other trademarks and registered trademarks are the property of their respective companies. *Manufacturer's Suggested Retail Price. Dealer price may vary.

Circle 172 on reader service card

Macworld

Subscriber Courtesy Voucher

As a subscriber you are entitled to receive a full year of Macworld for 60% off the annual cover price of $59.40. You save $35.40!

Please Check:

☐ 12 issues/$24. Bill me later.

Name

Company

Address

City, State, Zip

Allow 4 to 6 weeks for delivery. For Mexican and Canadian subscriptions, please add $18 per year for shipping. Add $70 annually for all other foreign countries.

Savings Statement

Annual Cover Price

$59.40

Regular Subscription Price

$30.00

Your Special Rate

$24.00

4CMR7

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

these structures are usually of modest size on a page, Kekulé is oriented toward the use of inexpensive hand scanners. The structures are also black and white, so it's actually hard to find a scanner that's not good enough for use with Kekulé.

You scan the structure into a TIFF file using either your scanner's own software or the KekScan utility included in the Kekulé package. You select Convert Scanned Image from the Scan menu, indicate the TIFF file you want interpreted, and Kekulé grinds away turning the file into an interpreted structure. The program presents the result against a grayed version of the scanned structure—this makes it easy to compare structural details and make sure Kekulé captured everything correctly.

What's amazing is how well Kekulé works. I assumed that by scanning tiny textbook figures and low-quality faxes of structures from *Science* I could provoke an interpretation-success rate like that of an OCR program, for which 98 percent accuracy on good material is typical. Kekulé processed 20 scans at 100 percent accuracy, including scans of molecules with unusual types of bonding. A likely explanation is that Kekulé takes advantage of a hierarchy of interpretation rules that take all possible chemical information into account. Even when a *C* looks like a closed blob in a scan, the program doesn't mistake it for an *O*—bonding information undoubtedly gives Kekulé an edge over OCR programs in this regard.

The interpreted structure can be sent directly to Cambridge Scientific's ChemDraw and hence to the whole ChemOffice suite. Unfortunately, in order to send structures to SoftShell International's ChemIntosh or to software from MDL Information Systems you have to buy a third-party format converter from Exographics (201/728-0188). Different connection-table formats for exchanging structures with standard minicomputer programs are also supported in the PC version of Kekulé, but not in the Macintosh version.

These file-exchange infelicities are a problem, but Kekulé's outstanding performance at its main function makes it a problem you'll want to tolerate. The educational and student versions are the same program as the commercial product, making it a bargain for most of the people who need it.

The Last Word

Every lab that uses ChemDraw or ChemIntosh needs a copy of Kekulé and a scanner. It's that simple. Kekulé will save you months of chemical-structure data entry work.—CHARLES SEITER

Drive7 3.0

Hard Drive–Formatting Utility

PROS: Boosts drive performance; simple to install and use; on some Mac models, lets you format a drive while continuing to work. **CONS:** Disk-caching capability can use lots of system RAM. **COMPANY:** Casa Blanca Works (415/461-2227). **LIST PRICE:** $79.95.

MW ★★★★

DRIVE7 FROM CASA BLANCA WORKS is a program that easily performs just about any hard drive–formatting chore. You can format, test, and partition most SCSI drives—and you can boost performance too, using the Mount Cache control panel, which sets aside system RAM to cache data.

Drive7 does most of its disk updating, formatting, and partitioning chores from a single window. Five buttons activate its basic functions (and provide online help). For more-sophisticated formatting options, you select Functions or Options from the menu bar.

Making It Simple You perform fundamental hard disk–formatting chores by pressing the appropriate button in Drive7's application window.

In addition to the same basic operations as those in the application window, the Functions menu gives you the ability to set SCSI ID by software (for drives that support this function), test your drive after formatting, and even select a hard disk icon from about 48 choices.

The Options menu lets you configure your disk-formatting options, such as the default disk name and partition style, and driver options, such as blind or polled reads (useful for slower Macs, and required by some accelerator boards). The Options menu also allows you to remap a disk's bad blocks automatically. One additional feature, Drive7's automatic stop time, causes a hard drive to spin down after an interval of inactivity and, like a PowerBook, spin up again as soon as you read from or write to the drive.

Casa Blanca Works has added a unique feature that's reserved for Macs with SCSI Manager 4.3 (the AV and Power Macintosh lines) and those that support SCSI-2 (the rest of the Centris and Quadra lines). If you own one of these models, you can actually format a drive and continue working in another program at the very same time. (I did the first draft of this review as Drive7 was busy formatting another drive.) At the worst, you'll probably witness a slight performance slowdown. Since formatting a large hard drive is apt to take anywhere from half an hour to an hour, this is one neat way to stay productive (unless you'd rather take a lunch break).

The Mount Cache control panel handles several chores. The most important is its ability to set aside a portion of RAM to cache frequently used data from your drive. This feature is similar to System 7's disk cache but more sophisticated in its execution. You set aside a specific amount of RAM for each drive. You have the option to turn off your system's cache and let Mount Cache do all the caching, or let both the system cache and Drive7 cache work at the same time. If you have several drives installed on your Mac, RAM usage can add up. It also takes a little trial and error to get the best setting, but I observed a noticeable (although not vast) performance boost when I tried Mount Cache on an old and slow Maxtor 127MB drive (I gave it a 256K cache).

Drive7's Mount Cache can also mount removable devices such as SyQuest and Bernoulli cartridges. You can also set partition options—for example, whether a drive is write protected, mounts automatically at time of start-up, has password protection, or is used as a boot partition.

The Last Word

Drive7 doesn't quite have the powerful driver-customization tools offered by FWB's Hard Disk ToolKit—but it doesn't really need them. For the vast majority of users, those features simply aren't necessary. Drive7 easily formats and partitions most drives and provides all the options you need. And within its limitations, its Mount Cache utility provides a real performance boost. I recommend Drive7 highly.—GENE STEINBERG

We're Becoming Very Big In Monitors.

Imagine this: Once every 15 seconds someone in the USA buys a new CTX color monitor.

That's a million last year alone – more even than sold under big names like NEC, Sony, IBM and Mitsubishi*.

And that's before the international experts started raving about our bigger, new, high-performance 1765GM and 1785GM 17-inch "green" monitors:

"Best 17-in. monitor" (Monthly PC Magazine, Japan). *"Best overall performance"* (Soft & Micro Magazine, France). *"One of the best monitors...bright, sharp display and excellent colors"* (Windows Magazine, Sept. '94). *"Symbol of Excellence Award"* (CETDC/ Business Week Asia, Taiwan). *"Best Display Products"* (Computex/Byte, Taiwan).

Not only does the larger, flat-square tube give you more display area for Windows,® an ultra-fine .26mm dot pitch and flicker-free 1280 x 1024 at 75Hz resolution bring your graphics to life as never before.

Users thrive on the ergonomic design; anti-glare, anti-reflection, anti-static screens; and its front-mounted, full-featured digital touch-panel.

These new low-radiation (MPR II-compliant) "green" monitors use only five watts of power when "on" but inactive. That's six times better than even the US EPA's own Energy Star guidelines.

So how did we get so big so fast? Simply by giving you more for less. For more information, call your nearest CTX office.

CTX

CHOICE OF THE PROS

USA Headquarters 20530 Earlgate Street, Walnut, CA 91789, 909-595-6146, Fax 909-595-6293 Technical Support 1-800-888-2012 BBS 909-594-8973 **Southern Region** 6624 Jimmy Carter Blvd., Norcross, GA 30071, 404-729-8909, Fax 404-729-8805 **Eastern Region** 481-A Edward Ross Drive, Elmwood Park, NJ 07407, 201-646-0707, Fax 201-646-1998 **Midwestern Region** 500 Park Blvd., Ste. 295C, Itasca, IL 60143, 708-285-0202, Fax 708-285-0212 **Southwestern Region** 1225 E. Crosby Rd., Ste. A21, Carrollton, TX 75006, 214-416-9610, Fax 214-245-7447.

©1994 CTX International, Inc. All brand names are trademarks or registered trademarks of their respective owners.
*Official 1993 Monitrak U.S. monitor sales research.

Circle 38 on reader service card

OmniPage Professional 5.0

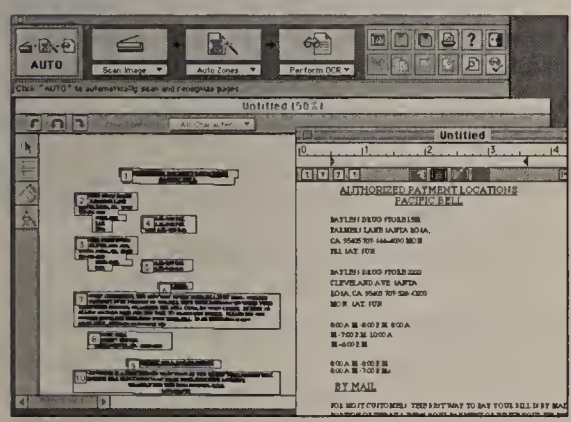
OCR Software

PROS: Accurate on clean documents; compact; efficient; includes math type-symbol display. **CONS:** Complex real-world documents still a challenge. **COMPANY:** Caere Corporation (408/395-7000). **LIST PRICE:** $695.

MW ★★★★

IN *MACWORLD'S* LAST roundup of OCR (optical character recognition) software ("OCR: The Recognition You Deserve," November 1993) we predicted that if a vendor produced a PowerPC-based OCR program and put every state-of-the-art method into the package, recognition accuracy could approach 100 percent on "good" documents. We were right.

OmniPage Professional 5.0 is just such a program. It reads documents typed on an IBM Selectric with a Courier type ball, it reads clean laser-printed documents with standard fonts, it reads plain black-on-white magazine text (*The New Yorker* is a better target than *Wired*, for example), and it reads all three categories at 100 percent accuracy. That's a historic first in OCR. Earlier programs could approach this accuracy with extensive training on particular fonts (OmniPage Pro supports training, too), but this program produces this accuracy level right out of the box. The Power Mac has



Zoned Out Auto Zones works well on simple documents; the reading accuracy is excellent on clean text; and you direct the most common OmniPage operations using a handful of tool-bar icons.

enough throughput that OmniPage can call out trigram-frequency analysis (three-letter combinations), a spelling checker for error detection, its proprietary so-called 3-D OCR (it uses gray-scale information for improved accuracy on fuzzy letters), context analysis of word-pair frequencies, and a type of neural-net–based image sharpening—and still get a page interpreted in 8 seconds or so. You can use a Mac IIci, but the processing time goes beyond a minute per page.

The interface has been greatly improved. All you do is click on a single button to scan, zone, and interpret a document. You can also click on the Check Recognition button in the tool bar and review doubtful readings case by case. The Auto Zones function works well enough for plain text blocks (a good thing, too, since overriding it is awkward). But even using OmniPage's True Page option, which isolates and preserves graphics scanned along with text, zoning (and with it interpretation) is often foiled by graphics that have text prominently overlaid. That's not a problem for scanning legal documents, but OCR, even in OmniPage, still couldn't scan in a standard *Macworld* article with infographics and get the whole thing right. Nonetheless, OmniPage and its slick new interface can handle most business OCR tasks.

As you would expect, this program supports every scanner currently sold in the Mac market and can save files in the formats of every common word processor. OmniPage Pro 5.0 also includes a copy of Image Assistant, an application with most of the features of Adobe Photoshop but without native-mode speed. Image Assistant is handy for touching up scanned graphics.

OmniPage Pro still makes some baffling, small errors on real-world documents. It usually preserves formatting (bold, italic, font size) correctly, but sometimes it puts the bold format on the wrong words in a line where bold text occurs. Occasionally, it blows up the point size of text in part of a line for no apparent reason, and it will lowercase random letters in the middle of an uppercase line. Finally, and this is hard to understand in light of the trigram-probability checking, in some fonts OmniPage persistently reads *the* as *teie*. As long as I'm complaining, I should note that you can expect to wait a half hour or more to reach Caere's customer support, which fortunately has all the answers once you get through.

The Last Word

OmniPage Professional 5.0 is the first program to do what most users actually expect of OCR. On good text samples, its accuracy is 100 percent, which is realistically what's required for an OCR product in most businesses. At present OmniPage has no competition on the Power Mac.—CHARLES SEITER

PowerAgent 1.1

Task-Automation Software

PROS: Easy script development; great management of FileMaker Pro. **CONS:** Difficult to implement scripting in many mainstream applications. **COMPANY:** SouthBeach Software Corporation (305/858-8416). **LIST PRICE:** $159.

MW ★★★★

HOW MANY HOURS PER DAY DOES your Mac actually need you? Do you ever find yourself sitting in front of the screen waiting for a database update to download? Are you simply babysitting your Mac while it grinds through mail merges? With PowerAgent, a little glimpse of the future of Macintosh computing, all the boring, time-consuming stuff can be automated and performed at off-peak times.

PowerAgent is simple enough that even someone with no programming background can use it for basic tasks. The program opens with a blank job list (see "Just Another Job"). You click on the Job Card icon to get a choice of action flags to set: Date and Time, Start Up, Shut Down, Check Data, and Apple Event. Start Up, for example, is the flag to pick if you want an action to be carried out every time your Mac starts up. Date and Time can be set for one-shot or every-Tuesday-at-10-a.m. actions. Then you pick a task from another set of five possibilities: Alert Message (you can send alert messages to a whole network), Print Message, Send Mail, Run FileMaker Pro Script, and Run AppleScript. The E-mail function currently works with CE Software's QuickMail and Apple's PowerTalk. In practical terms, this means that QuickMail is easy to use with PowerAgent, but for other E-mail programs you'll want to be on a network where a kindly system administrator has installed PowerTalk for you, along with a PowerTalk-capable E-mail system.

The AppleScript and FileMaker Pro script functions are the real payoff in PowerAgent. It's nice to be able to send yourself alerts and to print message files at night, but it's not crucial. The FileMaker Pro script function, however, really makes a difference, mainly because FileMaker scripting is easy enough that people can actually use it. All the normal database tedium—printing 500 mail merge letters, checking mailing lists for duplications, updating inventory, generating standard weekly reports—becomes

continues

Anderson & Lembke, Inc.

WHAT OUR ENGINEERS HAD IN MIND WHEN WORKING ON OUR NEWEST SCANNER.

Introducing the Agfa StudioScan II.

Push a button, make a scan. Is it really that simple? With the new Agfa StudioScan II, it can be.

That's because StudioScan II was designed for simple operation. Two levels of scanning software are built in — easy-to-use Agfa FotoSnap and comprehensive Agfa FotoLook. Plus, our exclusive, 42-page Introduction to Digital Scanning will guide you through the scanning process.

What's more, every StudioScan II comes complete with Agfa FotoTune color management software and our IT-8 reference target, along with Adobe PhotoShop™ LE and OmniPage Direct™ OCR software. All in a 400 x 800 ppi, 30-bit, one-pass scanner. And all for about $1,000.

So if you want an easy way to bring a scanner into your office, all it takes is the new StudioScan II. And your finger. Call 1-800-685-4271 to find out more information on Agfa's new scanners.

AGFA Agfa
The complete picture

AGFA and the Agfa rhombus are registered trademarks. Photoshop is a trademark of Adobe Systems Incorporated, which may be registered in some jurisdictions. Omnipage Direct is a trademark of Caere Corporation.

Circle 158 on reader service card

SEE US AT SEYBOLD BOOTH #1201

a matter of recording the script in FileMaker and then telling PowerAgent when you want it done. There's no real programming involved, and PowerAgent becomes a sort of programmable timer for your FileMaker operations.

The AppleScript function (PowerAgent has a wonderful dialog-box–based scriptwriter) in principle lets you have the same kind of control over dozens of other applications. The snag in this arrangement is that not enough script development has been done at the applications level. FileMaker Pro figures prominently in the PowerAgent manual not just because it's the most popular Maintosh database but because scripting FileMaker Pro is relatively easy. You could also write AppleScripts that run tasks in Microsoft Excel, but you'll be on your own figuring out how to do it—even the Excel 5 manual has nothing to say about AppleScript. PowerAgent lists other script-capable applications, among them QuarkXPress and Aldus PageMaker, but you can expect to put in some long hours with Derrick Schneider's *The Tao of AppleScript* (Hayden, 1993) before you can make this happen. In PageMaker, for example, you have to use AppleScript to issue the commands of PageMaker's own internal scripting language. That's a job best left to a programmer who will be developing scripts for companywide use. It's not SouthBeach Software's fault that the rest of the world isn't as script-hip as it should be, but the situation at present limits PowerAgent's value. Still, the idea of an agent program that manages scripts is extremely powerful, and SouthBeach Software can expect PowerAgent to be a hot item as more applications put AppleScript to work.

The Last Word If you're not scared of scripting, you can revolutionize your Macintosh work with PowerAgent. Support for automating FileMaker Pro functions is already superb, and PowerAgent will be able to handle other applications equally well once scripting gains wider acceptance.—CHARLES SEITER

Just Another Job The Job List, just a list of tasks to automate, is the source of PowerAgent's power and relative simplicity.

White Knight 12.0

Telecommunications Software

PROS: Solid performance; rich feature set.
CONS: Steep learning curve; quirky interface; lacks online help (except for scripting).
COMPANY: The FreeSoft Company (412/846-2700). **LIST PRICE:** $139.

MW ★★★★

SCOTT WATSON'S WHITE Knight 12.0 is the latest descendant of a telecommunications program that dates back to the earliest days of the Mac. What began as a shareware program called Red Ryder, over the years became commercial, got a name change, and was revised many times. But the numerous updates have not changed the program's focus as an all-in-one telecommunications application. While other programs have become fatter and slower, and have acquired Windows-style shaded menus, Watson's vision of the ideal telecommunications software remains sharp and true. White Knight offers just about every telecommunications feature you need and likely have ever imagined, including one or two that are unique to the program.

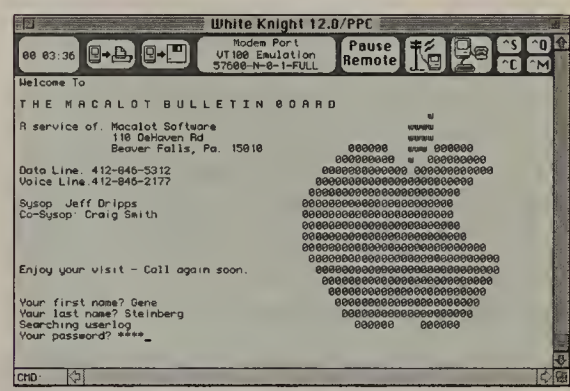
Still, in the finest Mac programs you can open the application and figure out the basics with a minimum of fuss. White Knight is not such a program. Watson tells you in the beginning of the manual that he expects you to sit down and read it, thoroughly, before using White Knight. And you should definitely take him at his word.

In these days of Windows-like tool bars and buttons, White Knight has maintained its plain but cluttered interface (and its minimalism—the 680X0 and Power Macintosh versions each ship on one 800K disk). You work in a single application window with a bewildering array of menus and submenus. The basics, such as logging on to a BBS or an online service, are relatively easy. But the program's more advanced features, including its flexible scripting capability and multitude of terminal-emulation choices (from TTY to Televideo), are another matter. The online help deals only with scripting, and without the manual you can get lost in cyberspace real fast. Fortunately, the manual is written in an easy-to-read, friendly style.

Despite the sometimes awkward interface and strange, multicharacter keyboard shortcuts (such as ⌘-M-H to hang up your modem), White Knight works impressively well. The native Power Macintosh version, for example, seems to execute steps in the blink of an eye.

Making connections through White Knight is fast and reliable. The program supports all the popular file-transfer protocols, including Xmodem, Ymodem, and Zmodem, as well as more-arcane protocols like Classic Kermit, Long Packet Kermit, Sliding Windows Kermit, and CompuServe Quick B. White Knight also offers a proprietary transfer scheme called Flash. You can use Flash only to connect to other systems using White Knight, but in my tests, Flash provided more consistent performance and better transfer speeds than other telecom products.

White Knight's powerful scripting language allows you to automate every part of your connection routine, from simple log-ons to file and message transfers. Writing a script (which White Knight calls a "procedure") takes practice, and a big chunk of the manual is devoted to describing how it's done. But you don't have to write a procedure from scratch; the program can do it for you by recording your actions (somewhat the way a macro program does).



Telecommunications Center Most of your work in White Knight is done in the main application window. Here, we've logged on to the support BBS for White Knight.

You can store all of your connection scripts in a handy phone book. White Knight's phone-book window mimics a printed address book, even providing a virtual slider for selecting entries stored under a specific letter of the alphabet.

The Last Word
White Knight is an acquired taste, to be sure. If you want the ultimate in ease of use, you may be better off with Aladdin Systems' SITComm or Software Ventures' MicroPhone. But if you are willing to read the manual from cover to cover—and learn how to use the extraordinarily wide range of features White Knight has to offer, as well as its sophisticated scripting—it may well become your favorite telecommunications tool.
—GENE STEINBERG

ClickBook 1.1

Print Utility

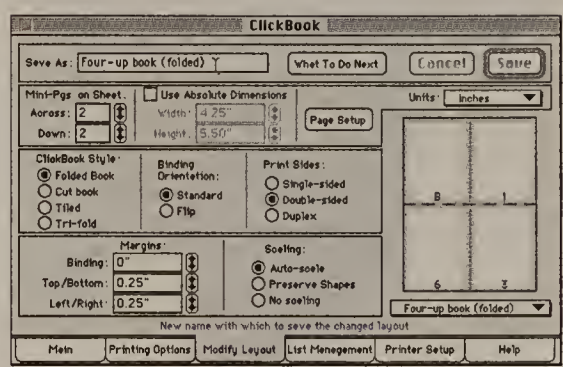
PROS: Nearly foolproof pagination; easy to configure; good online help. **CONS:** Scaled graphics and fonts can be distorted. **COMPANY:** BookMaker Corporation (415/354-8161). **LIST PRICE:** $69.95.

MW ★★★

SO YOU WANT TO BE A PUBLISHER? BookMaker's ClickBook might take you one step closer to your Rupert Murdoch fantasies. ClickBook is a print utility that helps you format documents into double-sided booklet form, and automates the rather arcane process of pagination. The program comes with 20 preconfigured booklet types and allows you to create more layouts as you need them. The layout tools aren't fancy, but then again, ClickBook isn't aiming to be QuarkXPress.

Creating a booklet in ClickBook is easy. First you open a document (in almost any text or graphics application) and choose Page Setup from the File menu; then you check a box to make ClickBook active. Finally, you print the document using the standard Macintosh print command. Instead of sending the pages to the printer, ClickBook captures them in a buffer and then allows you to select a booklet type. The program arranges the document pages so that they are printed in a smaller format, and they come out of your printer as page signatures: single sheets with multiple minipages printed on them.

While ClickBook makes it easy to print your documents as minipages, you'll need to practice a little to get those pages to look right. Some of the layouts reduce the page size and the margins quite a bit—enough so that you will need to use a fairly large type size for it to still be legible after being reduced. You'll also need to experiment with the margins to get the pages to print correctly.



Gutenberg Never Had It This Easy ClickBook's booklet-layout dialog box enables you to design your own booklets and brochures, or just make double-sided copies.

Once you have the printed pages in hand, the next step is to assemble them. An option lets you print straightforward assembly instructions with your booklet, but adding page numbers to your document in the original application makes booklet construction a lot simpler.

ClickBook booklets are no substitute for professionally printed books, manuals, or brochures. ClickBook doesn't use a page-description language such as PostScript to preserve letters and graphics. When it scales pages down, there can be a slight loss in image quality; gradients and gray-scale drawings suffer the greatest degradation.

To reduce the distortion that scaling causes, ClickBook has options that let you preserve graphic and text shapes. You can also choose a no-scaling option and do the necessary scaling manually in the document's original application.

The Last Word Overall, most people will be satisfied with the quality of ClickBook's booklets. With just a little practice, I created address books, shareware manuals, and minibooks of poetry of variable length using such applications as Microsoft Word, No Hands Software's Common Ground, and QuarkXPress. For small businesses or individuals who need to create inexpensive booklets quickly and without hassle, ClickBook is an excellent choice.—MATTHEW HAWN

PowerPort Mercury/PB 500 Series

Fax Modem

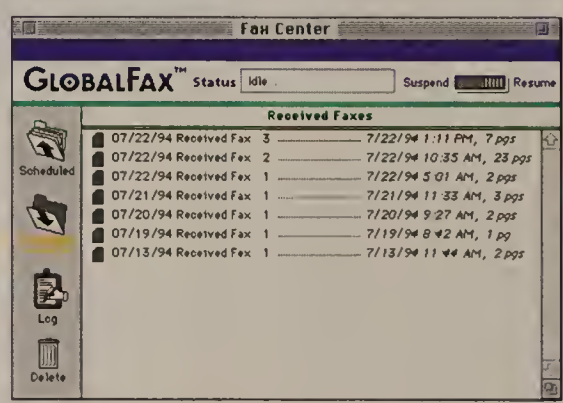
PROS: Solid performance; excellent fax software; capable telecommunications program. **CONS:** Difficult installation; fax software doesn't support gray-scale images. **COMPANY:** Global Village Communication (415/390-8200). **LIST PRICE:** $399.

MW ★★★★

AT THE MOMENT, IF YOU WANT to install an internal fax modem on your 500-series PowerBook, you have one choice—Global Village Communication's PowerPort Mercury. Fortunately, the PowerPort Mercury is a top-notch product capable of exemplary fax and data-communications performance.

If you decide to purchase this fax modem, you may want to get a PowerBook bundled with it. The design of the PowerBook 500 series makes modem installation a job you should not take lightly. The installation guide for the modem is 32 pages long and lists 68 steps that involve complete disassembly and reassembly of the computer.

Global Village's GlobalFax software is a work of elegance. You can configure, view, and print faxes from within the Fax Center desk accessory (which uses just 20K of RAM). You can have faxes print automatically by setting the Print Fax option and leaving Fax Center open. As soon as your fax is received, the printing process begins. You can send faxes from within most applications by holding down the option key and selecting Fax from the File menu. The Fax window also lets you select an address book, search for individual names, or add new names. You can choose from a list of options for your faxes, such as whether to send a fax in standard or best quality, whether to include a cover page, and whether to fax the document now or at a scheduled time. You can also assemble separate fax documents and send them in a single operation.



Making It Easy Global Village's Fax Center desk accessory is your command center for fax chores.

For general-purpose telecommunications, Global Village provides a licensed version of the shareware favorite ZTerm (you don't have to pay a shareware fee). For logging on to a bulletin board or online service, ZTerm is fast and easy to use. The program has a limited script-creation capability, and it transfers files at top speed using the Zmodem protocol. You can also use ZTerm to set up address books for your most frequent BBS visits.

The PowerPort Mercury's performance is virtually flawless. It sends and receives faxes quickly, and the quality is superb. However, the PowerPort software (version 2.08b) doesn't support gray-scale faxes. When I used the PowerPort Mercury as a data modem, I was able to connect to all of my favorite online haunts without any problems. The PowerPort Mercury supports V.terbo (a subset of the V.32bis standard), providing a data-transfer rate of up to 19.2 Kbps. I was able to locate only one source—Global Village's own BBS—that supports that speed, but I had no difficulty achieving reliable 19.2-Kbps connections there.

The Last Word All told, the PowerPort Mercury fax modem is a first-rate product. I recommend it without hesitation. —GENE STEINBERG

Overall Value? No One Beats Us!

BEST MAC MAIL-ORDER COMPANY

BMUG

FALL 1994
CHOICE PRODUCT

Out in California the Berkeley Mac Users Group named us a Fall 1994 Choice Product, writing: "This is still the Best All Around Mac Mail-Order Company. Others have tried to beat them but have fallen short...They can answer technical questions almost as well as BMUG, and are always friendly."

BEST ALL-AROUND COMPANY

BCS
THE BOSTON COMPUTER SOCIETY

Closer to New Hampshire, the Boston Computer Society's 25,000 members recently gave us an UGLY Award (User Groups Like You) for Best All-Around Company. Other comments included: "Superior service," "incredibly fast shipping," "reliable," and "a knowledgeable sales staff."

EVERYTHING OVERNIGHT $3 — MORE THAN 5000 PRODUCTS — TOLL-FREE TECHNICAL SUPPORT — ONE-MINUTE MAIL ORDER — LOW DISCOUNT PRICES

The Best Since 1984

Did You Know...?

MacConnection is part of PC Connection, which, led by the best-looking mascot in the business, has won *PC World*'s World Class Award for Best Mail-Order Company an unprecedented four times!
So if you need anything for your PC, you can *still* get the best service in the business.
(Call 800-800-5555).

800-800-3333

MacConnection®

14 Mill Street, Marlow, NH 03456 603-446-3333 FAX 603-446-7791

HOT!

CONNECTIX
14789 Ram Doubler 1.5 ..... $55

BERKELEY SYSTEMS
5737 After Dark 3.0 ..... $29.95

SUPRA
5337 SupraFAXModem 144LC $139.95

MICROSOFT
2884 Microsoft Works 4.0 ..... $87.95

KENSINGTON
2547 Turbo Mouse 4.0 ..... $107

APPLE
16229 Macintosh System 7.5 ..... $99

COMMUNICATIONS

1674	CompuServe Member/Nav Bun	$72.00
14233	DCA Crosstalk for Macintosh	119.95
10080	Delrina Fax PRO for Macintosh	59.95
7710	Global Village PowerPort Gold	259.95
11419	Hayes ACCURA 144+FAX144	149.95
11422	Hayes ACCURA 96+FAX96	144.95
10007	MDS 14.4LC FaxMod w/Fax LITE	119.95
8478	MDS 14.4 FaxMod w/Fax LITE	139.95
4322	MDS 28.8 FaxMod w/Fax LITE	299.95
16336	STF FAXstf 3.0 AutoPak Bundle	89.95
7639	STF FAXstf 3.0	39.95
14152	Zoom VFX 14.4V Voice FaxMod	149.95
15895	Zoom VFX 28.8 FaxModem	189.95

STORAGE

10499	IOMEGA MacTransport 150	$479.00
10602	IOMEGA 150MB Cartridge	99.95
15097	MDS SyQuest 44MB Rem Drive	199.95
15802	MDS SyQuest 88MB Rem Drive	299.95
15950	MDS SyQuest 200MB Rem Drive	529.95
5592	MDS SyQuest 270MB Rem Drive	529.95
6799	MDS 170MB Hard Drive (Quant)	299.95
13338	NEC 3xp CD-ROM Drive	399.95

MEMORY

9437	2x8 SIMM Module (2MB, 80ns)	$89.95
7437	4x8 SIMM Module (4MB, 80ns)	179.95
11151	1x32 SIMM (4MB, 72 pin, 70ns)	169.95

BUSINESS

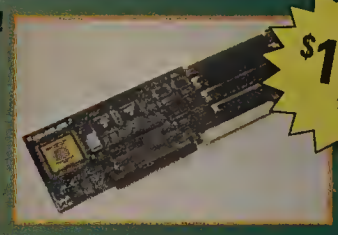
5618	Acius 4th Dimension	$575.00
3548	Banner Blue Org Plus for Mac	125.00
3903	Claris ClarisWorks 2.1	199.95
3836	Claris FileMaker Pro 2.1	265.00
14805	Claris Clr Choice ClarisOrganizer	49.95
14540	Creative Think Whack Pack	29.00
11721	Fisher Idea IdeaFisher 2.0	95.00
3669	Microsoft Excel 5.0	295.00
2878	Microsoft PowerPoint 4.0	295.00
4902	Microsoft Word 6.0	295.00
2884	Microsoft Works	87.95
5454	MS Office w/Ram Doubler 1.5	475.00
8010	Niles EndNote Plus	142.00
11190	Nisus Complete Flag Edition	199.95
2981	Nolo Press WillMaker	36.95
3041	State of the Art MacP&L	189.95
2986	Timeslips Timeslips III	194.00
4268	WordPerfect 3.0	329.95

UTILITIES

16458	Berkeley After Dark CD-ROM	$44.95
5041	Central Point MacTools 3.0	85.95
8441	Connectix CPU	55.00
14789	Connectix Ram Doubler 1.5	55.00
6925	Now Software Now Utilities	84.00
6748	Symantec Norton Utilities (NUM)	95.95
5176	Symantec AntiVirus Mac (SAM)	65.95
12692	Working Software Toner Tuner	19.95
8252	Working Software WaterMarker	29.95

POWER PC EMPOWERMENT!

Plug DayStar Digital's **PowerPro 601** into your Quadra for the speed and processing performance of the new **Power Mac 8100**. Includes, for a limited time, PhotoMatic and ColorMatch software (a $400 value!).

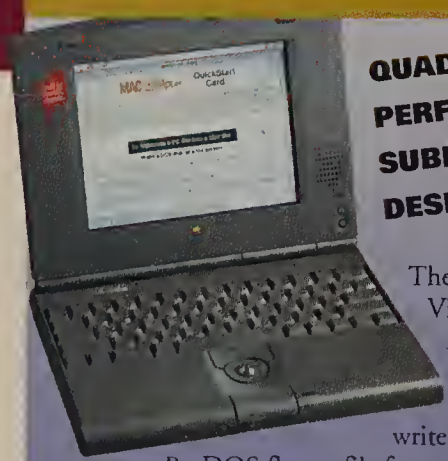


$1499
15925

We Carry More Than 5,000 Products for Your Mac!
CALL FOR A FREE CATALOG!

ALL AT LOW DISCOUNT PRICES!

POWERBOOKS



QUADRA PERFORMANCE; SUBNOTEBOOK DESIGN!

Order by 10 p.m. ET and we'll *still* ship overnight for $3

CUSTOMIZING?

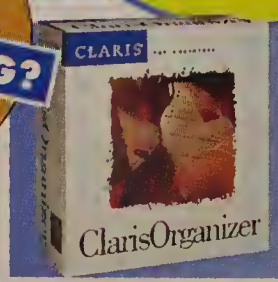
The **Apple PowerBook Duo 280C**. Vivid 16-bit color on an 8.4" Active Matrix screen. You get a 66/33-MHz processor in a package weighing under 5 pounds. It also reads and writes Mac, Windows, DOS, OS/2, and ProDOS floppy file formats. And it's upgradeable to PowerPC.

16024 **PowerBook Duo 280C** $3449

16031 **PowerBook Duo 280C & 12MB RAM & Express Modem Bundle**
This special low-power Hayes-compatible modem provides 57,000 bps data & 9600 bps send/receive fax transfer rates. Built-in Apple® Remote Access... $3899

10341 **PowerBook Duo 4MB Memory** $199.95
For PowerBooks 150, 210, 230, 250, 270C, 280, 280C .....

10340 **PowerBook Duo 8MB Memory** $389.95
For PowerBooks 150, 210, 230, 250, 270C, 280, 280C .....



INTELLIGENT MAC PIM

limited time special $49.95
14805

Drag-and-drop **ClarisOrganizer** seamlessly integrates calendar, tasks, contacts, , and notes. It finishes typing frequently used words and performs fast data searches. Get organized from Claris Clear Choice.

LEGENDARY DISPLAY; LOW PRICE!

$349
13054

NEC's **MultiSync 2V** delivers outstanding display quality for under $350! This 14" color monitor features sharp .28mm dot pitch, a shadow mask of heat-resistant material that makes the monitor 20% brighter than the competition, digital controls, reduced magnetic fields, and more.

© 1994 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH. All other trademarks remain the property of their respective companies.

GRAPHICS

1736	Adobe Illustrator 5.5	$389.95
16335	Adobe Photoshop 3.0	569.95
1330	Aldus FreeHand 4.0	389.95
15021	Aldus Persuasion 3.0	324.95
11548	Aldus PageMaker 5.0	549.95
1195	Altsys Fontographer	289.95
16119	Corel Gallery on CD-ROM	34.95
3227	Deneba Canvas 3.5	264.95
9034	Equilibrium DeBabelizer Toolbox	259.95
11724	Graphsoft MiniCad + 5.0	549.95
11193	HSC Kai's Power Tools	119.95
9192	Innovative Data MacDraft 4.0	349.95
7612	Quark QuarkXPress 3.3	599.95
4962	Specular Infini-D	519.95

ACCESSORIES

16559	American Power Back-UPS 280	$109.95
1305	Targus Universal Notebook Case	69.00

INPUT/OUTPUT

15456	Adesso Extended Keyboard	$79.95
16455	Agfa Studio Scan II	979.00
7925	Caere OmniScan	219.95
16084	Epson Stylus Color Printer	599.95
2499	GDT PowerPrint 2.5	99.95
15858	HP DeskWriter 560C	579.95
16212	Mouse Systems MacPoint	29.95
14436	NEC SilentWriter 640	749.95
16443	Okidata OL410E PS Printer	999.95
13658	TI microLaser Pro 600	1,199.00
14236	TI microWriter PS23	719.00

VIDEO & SOUND

16515	Aitech MultiPro CTV (external)	$279.95
15691	Altec ACS300 Speakers	239.95
16287	Connectix QuickCam	99.95
13054	NEC Multisync 2v	349.00
11810	Sony 15SF 15" Color Display	499.95

B&W & COLOR INKJET

The **HP DeskWriter 560C** gives you sharp 600x300dpi resolution with clear, vivid output. Dual ink cartridge slots integrate black and color printing without switching.

$579.95
15858

STOP

GET YOUR POWER MAC APPS HERE!

See an application you like? Own a Power Mac? If there's a Power Mac version available, we have it. From Aldus to Adobe, Claris to Quark. Call for details.

Accelerated for Power Macintosh

IOMEGA®

BERNOULLI REMOVABLE: HARD DRIVE BARGAIN.

The IOMEGA **MacTransportable MultiDisk 150**'s award-winning hard drive performance is well paired with unlimited removable disk storage capacity. Carry it anywhere with the attached handle and mount it horizontally or vertically. MultiDisk means the 150 reads and writes 35MB, 65MB, 90MB, 105MB, and 150MB disks. Prices are lower than ever and include a 2-year warranty!

MacConnection®

800-800-3333 OR FAX YOUR ORDER **603-446-7791**

ORDERS BY 3 A.M. ET SHIP FOR NEXT DAY DELIVERY.
TOTAL SHIPPING CHARGE ONLY $3

COWABUNGA! IT'S THE SIMPSONS!

The new **Simpsons Screen Saver** gives you 16 hilarious, animated displays with Homer eating your screen, Bart, Marge, Lisa playing her saxophone, Itchy & Scratchy at war, Krusty the Clown, Bart, Grampa, and all the rest!

$29.95
16318

UPGRADES

1787	**Adobe Illustrator** *(Version-from 5.0 to 5.5)*	$98.95
11472	**ClarisWorks 2.1** *(Version)*	$69
16551	**Microsoft Office 4.2** *(Version)*	$279.95
10864	**Aldus PageMaker 5.0** *(Version)*	$145.95
12049	**WordPerfect Mac 3.0** *(Competitive)*	$95.95
10312	**Symantec Anti-Virus Mac 4.0 (SAM)** *(Version)*	$29.95

OUR POLICY

- VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge.
- Your credit card is not charged until we ship.
- All U.S. shipments insured; no additional charge.
- APO/FPD orders shipped First Class Mail.
- International orders: Add 2% surcharge and $2.30 insurance. Manufacturer support and upgrade eligibility may be limited outside the U.S.A. Some products not available for export, call or fax for information.
- COD maximum $1000. Cash or cerfified check. COD orders require an additional $4.50 charge, ship via UPS and may require additional UPS charges.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to change without notice.
- We are not responsible for typographical errors.

SHIPPING

Continental U.S.: Total shipping charge on any order is $3. Barring events beyond our control, all credit card orders (non-COOs) phoned in weekdays by 3 a.m. ET will ship Airborne Express for delivery the next business day. That's same day delivery for orders placed between midnight and 3 a.m.! (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery.

Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. Please call for information.

All other areas: Please call 603-446-3333 or FAX 603-446-7711 M-F 9 a.m.-5:30 p.m. ET.

HOURS

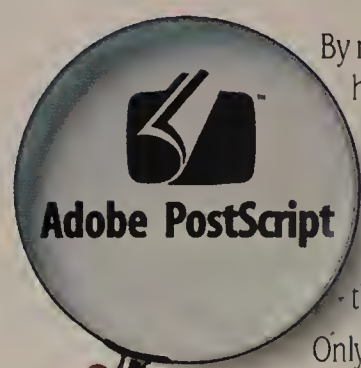
8 a.m. Monday continuous thru 5 p.m. Sunday ET.

1194MW

Before You Invest in a High-Resolution Laser Printer, Take a Closer Look.

Free Cop
Adobe Illustrator
with each Printer Purcha
Offer Good Thru October 31,

Introducing XANTÉ's NEW Accel-a-Writer 8200 Featuring Adobe PostScript Level 2.



By now, you realize there are other high-resolution laser printer manufacturers in the main stream, but chances are, you don't know if they offer *genuine* ***Adobe™ PostScript™***. Well, just for the record, *Bo knows!*

Only XANTÉ® offers Adobe PostScript on a large format, high-resolution laser printer. And, since true PostScript guarantees high performance, incredible print quality, and software compatibility - you know it's the only choice!

You can purchase the Accel-a-Writer 8200 with 600 x 600, 800 x 800, or even 1200 x 1200 dpi – it's your call. Halftones, fine-line text, and graphics are phenomenal. And now, with oversized capabilities (up to 25"), you can print high-quality full-bleed newsletters, CAD drawings, spreadsheets, and more! XANTÉ's Accel-a-Writer 8200 is the new leader in affordable high-resolution printing. Accept no substitutes.

- ***Adobe PostScript Level 2***
  Guarantees superior quality, performance, and compatibility.
- ***High Resolution***
  600 x 600, 800 x 800, or 1200 x 1200 dpi.
  HP-GL® emulation offers up to 1200 x 1200 dpi.
- ***NEW Oversized Format***
  Print full-bleed 11" x 17" pages and custom size output up to 11.75" x 25".
- ***Simultaneous Macintosh®/PC Printing***
  LocalTalk®, serial and parallel interfacing. Ethernet is available.
- ***Faster Printing***
  Incredibly fast printing, up to 16 pages-per-minute.
  Faster processing with a 33 MHz AMD 29030 RISC Processor.
- ***Automatic Emulation Switching***
  Selects printer language between Adobe PostScript and HP PCL® 5.

So, before you buy a high-resolution laser printer, *look for the Adobe PostScript logo*, then call XANTÉ.

1-800-926-8839 ext. 2110
Fax 205-476-9421
MasterCard/Visa/American Express/Discover Card accepted.

Innovations In Output

Circle 111 on reader service card

Terrazzo 1.0

Plug-in Graphic-Effects Module

PROS: Fast; easy to use; easy to adjust; can export and import tiles. **CONS:** No integrated 3-D bump or lighting effects. **COMPANY:** Xaos Tools (415/487-7000). **LIST PRICE:** $199.

MW ★★★

IN A CHAOTIC DIGITAL WORLD, XAOS Tools' Terrazzo is an oasis of order and symmetry. A yin-yang complement to Xaos's first Macintosh product, Paint Alchemy, Terazzo is a cool plug-in module that transparently places powerful mathematical algorithms into the hands of the digital artist. Using one of 17 planar-symmetry groups, Terrazzo creates intricate repeating tiles from any bitmapped image. It's rather like having an adjustable kaleidoscope on your desktop.

Terrazzo works within Adobe Photoshop, Fractal Design Painter, and other graphics programs that accept plug-in modules; it adds 1MB to the host application's RAM requirements. The filter's uncomplicated interface displays a thumbnail of the source image (either the one you are currently working with or a user-specified alternate) along with a motif—a variable marquee that bounds the area used in the pattern calculations. The symmetry groups, carrying fanciful descriptions such as Honey Bees and Prickly Pear (named after American quilting patterns), dictate how much rotation, offset, and mirroring Terrazzo will apply to the sample. Once you've chosen a symmetry group and set the motif, Terrazzo displays a sample tile. You can adjust feathering, opacity, and color channels before rendering the tile into a repeating pattern across the image. You can also save individual tiles as discrete images, for later use as a tiled fill, in Photoshop, or as a repeating texture map for 3-D models.

Terrazzo is fun to use, but it's not easy to control precisely, nor can you always predict your results. You can't always tell whether interesting Terrazzo tiles will make attractive repeating patterns. While it is possible to gain a basic sense of how Terrazzo's symmetry groups affect an image, experimentation and serendipity are still intrinsic parts of the tile-making process.

Beguiling as its geometric magic can be, Terrazzo lacks a few features that 3-D artists in particular might desire. Unlike Specular International's TextureScape, Terrazzo does not allow the user to apply three-dimensional effects, such as lights, bumps, or bevels, to the surface of the pattern. One workaround is to create gray-scale patterns and use them as separate bump maps. Artists using Terrazzo with Fractal Design Painter can define tiles as paper textures to produce interesting relief and lighting effects.

Tools for Tiling Terrazzo's simple interface provides interactive feedback as you adjust parameters to create a pleasing pattern.

The Last Word Turning a random group of pixels into a geometric pattern may not be everyone's consuming passion, but Terrazzo has definite appeal for a select niche of fabric, graphic, and video designers, as well as folks who just yearn for a little more balance and harmony in life.
—AVI HOFFER

PostScript Utilities

Imagesetter-Simulation Software

CheckPost 1.3

PROS: Good interface; background and batch downloading; can strip fonts from PostScript files. **CONS:** Can't automatically scale pages; prints on a single sheet; limited error reporting; can't print from applications; incompatible with non-Adobe PostScript interpreters. **COMPANY:** Working Software (408/423-5696). **LIST PRICE:** $249.95.

MW ★★

LaserCheck 1.0

PROS: Automatically scales pages; gives lots of job information; prints pages up to point of error. **CONS:** No on-screen interface; unreliable on/off toggle; incompatible with non-Adobe PostScript interpreters. **COMPANY:** Systems of Merritt (205/660-1240). **LIST PRICE:** $199.

MW ★★★★

IF YOU OUTPUT PAGES TO A POSTScript imagesetter, you've no doubt experienced the frustration of getting back your paper or film with errors—wrong orientation, substituted fonts, cropped-off crop marks, and so on. The problem is, you generally can't use a laser printer to proof your imagesetter-destined PostScript output. The pages are too big, or they're rotated so you only see parts of them, or they don't print at all. CheckPost and LaserCheck address the problem, but neither works with non-Adobe PostScript interpreters; so clones need not apply.

LaserCheck LaserCheck is a file of PostScript code that you download to a printer (Adobe's SendPS downloader is included) to make it behave like an imagesetter. You can then print or download files destined for the imagesetter and get a representation of the pages as they will print on the film or paper roll, with each page automatically scaled to fit perfectly.

Around the edges of each page, LaserCheck provides a wealth of information on fonts, page orientation, PostScript operators used, screen and flatness settings, and processing time. If LaserCheck encounters a PostScript error, it prints what has already been imaged, along with a report of the error.

Once LaserCheck is resident in your printer, you can toggle its operation on and off, but this toggle program is not very reliable, so you often have to reset the printer to clear LaserCheck out.

CheckPost CheckPost provides the user interface that LaserCheck lacks. You can download a file using CheckPost (even in the background, via menus or drag and drop) and access its controls through menus and dialog boxes. You can see an on-screen report of fonts required by and included in a PostScript file, and you can remove any fonts, which speeds printing somewhat if the fonts are already on the imagesetter. But interface aside, CheckPost is a disappointment compared with LaserCheck.

CheckPost's Draft mode emulates various imagesetters, much as LaserCheck does, but doesn't automatically scale pages to paper size; you must manually specify scaling and orientation. And unless you download each page separately, CheckPost crams all the pages on one sheet—sometimes useful, but usually not.

CheckPost doesn't provide nearly as much information as LaserCheck, nor does it print the part of a page that's already been imaged when an error occurs. Finally, CheckPost requires you to create a PostScript dump and then download it; LaserCheck lets you print directly to a printer that has LaserCheck loaded.

The Last Word Between CheckPost and LaserCheck, I'd choose LaserCheck hands down; in fact, I find it essential. The program can save you hundreds of dollars, and many hours, on a single, large imagesetting job.—STEVE ROTH

Newton connects. When you carry a MessagePad™ 110, the new Newton® communications assistant from Apple, you carry the power that comes from having information at your fingertips. Which means no matter where you go, you always have access to the facts you need, at the moment you need them.

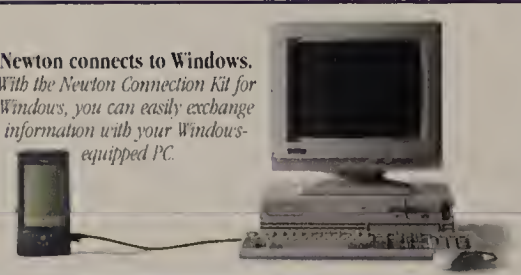
With the Newton Connection Kit 2.0 for Macintosh,® you can exchange information with your Macintosh, as well as with a range of popular Mac® software, such as ACT! contact manager, Lotus 1-2-3, Excel and Microsoft Works.*

So now you can do things like reference sales leads from Dynodex and work with data created in Microsoft Word, all from the palm of your hand. And if you're working on a PC running Windows, the Newton Connection Kit 2.0 for Windows will allow you to easily do the same with all your current Windows applications.**

To find out more, call 800-365-3690, ext. 100, for the Newton dealer near you. Or check out an on-line service for the interactive demo found on the Newton forum.† Either way, you'll find that instead of giving you more technology, Newton gives you something you can really use: help.

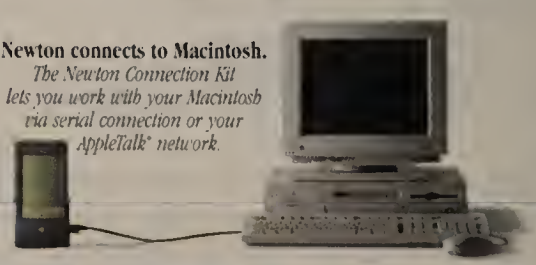
Newton. It's there when you need it.

Newton connects to Windows.
With the Newton Connection Kit for Windows, you can easily exchange information with your Windows-equipped PC.



Downloading, updating, and backing up information between your Newton and your computer is as easy as plugging in.

Newton connects to Macintosh.
The Newton Connection Kit lets you work with your Macintosh via serial connection or your AppleTalk® network.



*MacLinkPlus Library, a product of DataViz, Inc. **Available summer 1994. ConversionsPlus Library, a product of DataViz, Inc. †Look for the on-line Newton demonstration on the following services: AppleLink, America Online, CompuServe and the Internet. In Canada, call 800-665-2775, ext. 910, for information. © 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, AppleLink, AppleTalk, Mac, Macintosh and Newton are registered trademarks of Apple Computer, Inc. The Apple Hub logo and MessagePad are trademarks of Apple Computer, Inc. ACT! is a registered trademark of Symantec Corporation. Dynodex is a registered trademark of Portfolio Software, Inc. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Microsoft is a registered trademark of Microsoft Corporation.

The Multimedia Workshop 1.0

Multimedia Presentation Tool

PROS: Inexpensive; fun and easy to use; CD-ROM is packed with clip media. **CONS:** Lacks flexibility; does not create interactive presentations. **COMPANY:** Davidson & Associates (310/793-0600). **LIST PRICE:** $79.95.

MW ★★★

MOST MULTIMEDIA PROGRAMS cost hundreds of dollars and come with a long learning curve. The Multimedia Workshop is a different kind of media-integration tool—one that can be used by children or adults without a big investment of time or money. The Multimedia Workshop includes three authoring environments: the Paint Workshop, the Writing Workshop, and the Video Workshop.

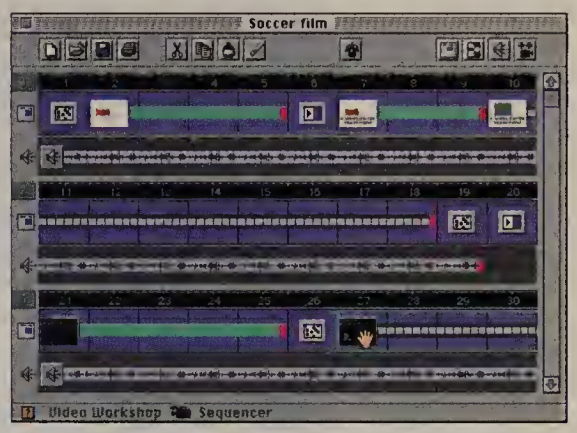
The Paint Workshop is a color paint program with all the basic painting tools, plus extras such as snowflake and tree tools. The Writing Workshop doesn't offer footnoting or an outliner, but it includes a spelling checker, a thesaurus, a read-aloud feature, and desktop publishing capabilities.

The heart of The Multimedia Workshop is the Video Workshop, which has a scene-generation module and a video-layout module. The scene-generation module allows you to place graphics, background templates, and QuickTime movies on the screen. Using the tool bar and menu commands, you might start with a background template of a picture frame, change the background color, type a title, and place a drawing in one corner and a movie in another. The screen shows what the scene will look like, except that the movie doesn't move.

You combine scenes in the video-layout module. The interface is similar to, but simpler than, the multitrack interface of Macromedia Director. By dragging icons and stretching bars on a time line, you arrange the order of scenes and change their durations. It's just as easy to add visual transitions between scenes and to place sounds in the audio track. When you play your production, the visual effects, video clips, and sound are synchronized according to your time line. If problems occur, you can easily go back to the Video Workshop and tweak the scenes and the time line.

The Multimedia Workshop is full of compromises: Each scene can contain only one movie. The time line lets you place cues only at one-second intervals. There's no sound editor. You can't layer narration over music (unless one is embedded in a movie). You can't create interactive presentations that respond to mouse-clicks.

The Last Word Still, it's hard to argue with satisfied customers. The adults and middle-school kids who tested The Multimedia Workshop for us produced eye-catching, snappy presentations in a few hours (including the time it took them to learn the program). They had a great time mining the CD-ROM full of clip art, music, and video for ideas and images, and they loved showing their masterpieces to anyone who passed by. For beginners, The Multimedia Workshop passes the screen test.
—GEORGE AND BEN BEEKMAN



Tracking the Action The blue track of the storyboard includes visual elements like pictures and movies; the gray track contains sounds.

Decision Analysis 2.5

Decision-Assistance Software

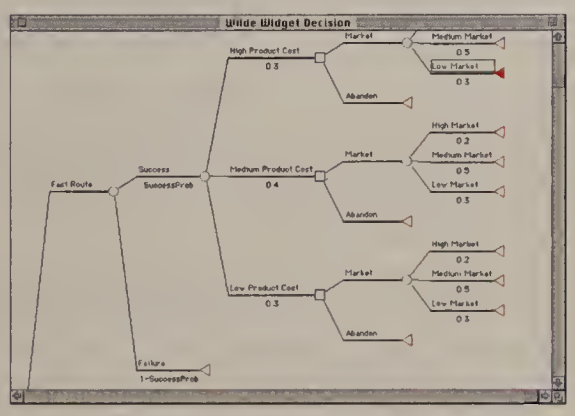
PROS: Straightforward visual approach; new options encourage realistic models. **CONS:** Needs spreadsheet-style summary. **COMPANY:** TreeAge (800/254-1911). **LIST PRICE:** $379.

MW ★★★★

TO UNDERSTAND WHAT DECISION Analysis from TreeAge (DATA) does, you have to understand the probability concept of *expectation value.* In California, for example, the state lottery pays out about $0.25 in prizes for every dollar in tickets. In a Nevada blackjack game, your expectation value is about $0.98 for every dollar you bet. The definition is as follows: expectation value equals payoff times the probability of the payoff. This is easy to follow in simple gambling cases, but it's not clear how to apply this concept correctly to complex, multistep business decisions.

DATA handles complex business cases by constructing tree diagrams of probabilities and payoffs, with a separate subtree representing each step of a process. Although probabilities in a process must sometimes be assigned subjectively, this procedure is the most realistic model available for the chances of success in a new project. If you need to know whether a million dollars invested in developing a new project will give you $2.3 million or $0.4 million as the likeliest payoff, DATA gives you a structure for employing whatever information you may have for sharpening your estimate of the expectation value. Pick New Tree from the File menu, choose Adding Branches from Display, fill in a few payoffs and probabilities, and you have a model. You can now ask for an Outline view of the information in your tree diagram.

Version 2.5 offers a generous list of improvements (TreeAge provides a manual supplement that's almost the size of the 2.0 manual). Sensitivity analysis now includes two-way sensitivity treatment and threshold analysis (essentially just a better way of handling ranges of payoff and expectation values). Different scenarios can now be studied with comparative graphs. A new node type (Markov) makes it possible to construct models of simplified time-dependent processes. Version 2.5 explicitly incorporates, under the Bayes's revision choice in the Options menu, the fact that you will often be modeling processes with incomplete data or with probabilities that will frequently be modified as the result of implementing your model and collecting results. Tree manipulation (copying subtrees, identifying lines, details of path analysis) has been improved, although trees in DATA still don't behave like true Macintosh graphical objects.



Up a Tree This DATA tree (and its subtrees) allows detailed analysis of the steps in a product marketing plan.

The Last Word If you have the responsibility for business decisions involving thousands of dollars and are willing to learn a new approach, DATA is the product for you. DATA offers a type of modeling that is more realistic and easier to modify than an Excel "what-if" study or a Crystal Ball analysis (see *Reviews, Macworld,* October 1994). DATA should be considered an essential part of a business analyst's tool kit.—CHARLES SEITER

SEE RED.

Design: Wheeler Design
Photography: Kory Addis

AGFA. FOTOTUNE. RED.

There's RED and there's RED. We see redheads and red fire engines and we paint the town red. And while a rose may be a rose, a red is not always a red. In the world of electronic publishing, this is doubly true. Scanners, monitors, and output devices define color in their own particular "languages" (called color spaces).

FotoTune is the solution. FotoTune, the Color Management System (CMS) from Agfa, takes those different color spaces and creates a "common language" called *ColorTag*. FotoTune insures color consistency throughout the workflow, from scanner to monitor to output device.

FotoTune. For all the ways of seeing red.

Find out how FotoTune can help you. Call 1.800.685.4271, extension Tune.

AGFA Agfa

SEE US AT SEYBOLD BOOTH #1201

Circle 90 on reader service card

SCSI-to-Ethernet Connectors

Network Hardware

DaynaPort Pocket SCSI/Link

PROS: Lightweight; can use ADB as power source; works with desktop Macs or PowerBooks. **CONS:** None. **COMPANY:** Dayna Communications (801/269-7200). **LIST PRICE:** 10BaseT $299; 10BaseT and thin Ethernet $369.

MW ★★★

Pocket EtherTalk Adapter

PROS: Lightweight; uses ADB as power source; works with desktop Macs or PowerBooks. **CONS:** Costs more than Dayna unit; long hold time for tech support. **COMPANY:** Xircom (818/878-7600). **LIST PRICE:** 10BaseT $349; 10BaseT and thin Ethernet $399.

MW ★★★

THE DAYNAPORT POCKET SCSI/LINK and the Xircom Pocket EtherTalk Adapter are lightweight, all-in-one SCSI-to-Ethernet connectors that work with both PowerBooks and desktop Macs that lack built-in Ethernet or NuBus expansion slots.

The garage-door-opener–size adapters have two SCSI ports that accommodate both DB-25 (found on desktop Macs) and HDI-30 (found on PowerBooks) SCSI connections; you can use only one port at a time. An HDI-30–to–DB-25 cable is provided to alleviate SCSI connection headaches. And setup is easy. A dial-style SCSI-termination selection switch facilitates placing the device anywhere on the SCSI chain. The adapters come preconfigured for a single device on your SCSI bus.

Except for price and tech support, both products are identical in form and function. They both transferred network information to my PowerBook with little effort. I attached one of the adapters to my PowerBook and moved the 10BaseT network connection from my desktop Mac over to the adapter. To use an adapter, you simply attach it to the PowerBook and attach the network connection from the desktop Mac to the PowerBook.

The device can be powered from either an external power supply or the Mac's ADB port. Use the ADB option sparingly, as it drains the PowerBook's battery and precludes the use of additional ADB-powered

PAUL BERG

devices. This isn't such a big deal considering that most of the time, where there's Ethernet there's electricity as well.

Both products provide an Ethernet alternative driver that must be installed in the host Mac's System Folder. The driver reroutes the network traffic through the SCSI port. I experienced no compatibility problems and could log on to servers and print just as I had previously.

Dayna's tech support was quick, responsive, and accurate. After waiting on hold for Xircom nearly 30 minutes, I gave up. (Xircom and Dayna also provide support via fax and online services and on the Internet.)

The Last Word With its cheaper price and more-responsive tech support, Dayna wins in my book.—MATT CLARK

MicMac 2.0v1

Recording Software

PROS: Easy setup; relatively clean, crisp recordings. **CONS:** Uses lots of hard disk space; poor reproduction with highest compression settings; only partly compatible with AV Macs. **COMPANY:** Nirvana Research (408/459-9663). **LIST PRICE:** $89.

MW ★★★

MICMAC TURNS YOUR MACINtosh into a portable tape recorder or transcription device. Instead of recording sounds onto a cassette tape, MicMac records sounds onto a disk file. The size of the file depends on the level of compression you select—6:1, 3:1, or none—and, if you have a newer Mac that supports CD-quality sound, which sampling rate you select.

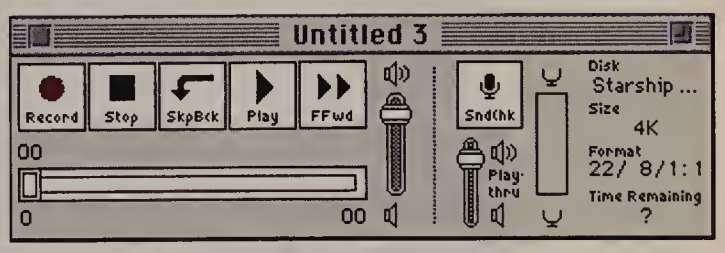
There is no manual, but the program includes a complete online tutorial, and you should be up to speed on this program in a few minutes. The main interface consists of a single window that mimics a tape recorder's control panel. You can use your Mac's microphone to record, or use a tape recorder or another Mac as your input source. If you make a mistake, the program's trim function allows you to replace all or part of your recording.

MicMac can run in the background, while you are working on another project (for example, typing the transcript of a recording into a word processing program). You can start and stop playback using keyboard commands, skip back to hear a segment over and over again, and mark spots for quick retrieval.

For most purposes, MicMac works comfortably within its less than 400K memory allotment. But when I attempted to record at a 44kHz, 16-bit sampling rate (CD quality) on my PowerBook 540c, the program put up a warning message requesting that I allot a larger RAM partition to the program. I gave it 800K and had no further problem.

At the highest-quality audio setting, sound reproduction was crisp and clean, but my hard drive filled up rapidly. Nirvana Research estimates that an hour of recording at MicMac's standard setting (22kHz, 8 bits, 6:1 compression) uses 13MB of hard disk space. I found audio quality at this setting barely acceptable (lots of hiss and some distortion), and I settled on the 3:1 compression rate (which uses twice as much disk space) as a listenable alternative (although it was not as crisp and clean as the higher-resolution settings).

A high-density floppy disk can contain only a 3-minute MicMac recording made at an acceptable quality level. A full hour's recording requires a removable disk of some sort—if you intend to archive your recordings, the cost quickly adds up. According to Nirvana, version 2.1 of MicMac will allow you to record at one resolution and play back at a lower resolution, which, the company claims, will allow you to get a superior-quality recording and reduce file size.



Just Press Record MicMac lets you record and play back your recordings with a single button or via a keyboard command.

The Last Word The concept of Mac-as–dictation machine is undeniably attractive, and Nirvana Research has pulled it off well. But when all is said and done, a minicassette tape recorder provides equal or superior sound reproduction and is easier and more flexible to use for recording than a PowerBook. The choice is yours.
—GENE STEINBERG

Samsung.
Mac's new point of view.

SyncMaster 17GLs

It's about how you work on your Mac. Attitude. Satisfaction. Pride. Samsung designed the SyncMaster™ GL Series to be an extension of your creativity.

Whether you design on a Quadra workstation, create multimedia presentations on a Power Macintosh or need external video for your PowerBook, the SyncMaster GL Series will improve the way you view your work.

SyncMaster	14GL	15GL	17GL	17GLs
CRT Size	14"	15"	17"	17"
Dot Pitch	.28	.28	.28	.26
Maximum Resolution	1024 x 768	1024 x 768	1024 x 768	1152 x 870
Maximum Refresh Rate at Maximum Res. (Hz)	75	75	75	75
MPR-II (Low Radiation)	•	•	•	•
Power Management	•	•	•	•
Flat Square Screen		•	•	•
On-Screen Programming			•	•
Real Color Control				•
Warranty	2 Years	2 Years	2 Years	2 Years

©1994 Samsung Electronics America Inc Image on SyncMaster 17GLs courtesy of Mike Quon Design Office Adaptor required for Macintosh Compatibility Macintosh is a registered trademark and PowerBook, Power Macintosh, and Quadra are trademarks of Apple Computer, Inc

With true 24-bit color, multiple on-the-fly resolutions and on-board color control, you can easily concentrate on what you're doing – not on what's running it.

Think about how you work on your Mac. Samsung did. And came up with a whole new point of view. For more information, give us a call at 1-800-933-4110.

TECHNOLOGY THAT WORKS FOR LIFE

SAMSUNG ELECTRONICS

Circle 198 on reader service card

MATLAB 4.1

Numerical Math Software

PROS: Complete and consistent program for numerics, with optimized matrix operations; extensive set of toolboxes. **CONS:** Adding toolboxes gets costly. **COMPANY:** The Math Works (508/653-1415). **LIST PRICE:** $1695.

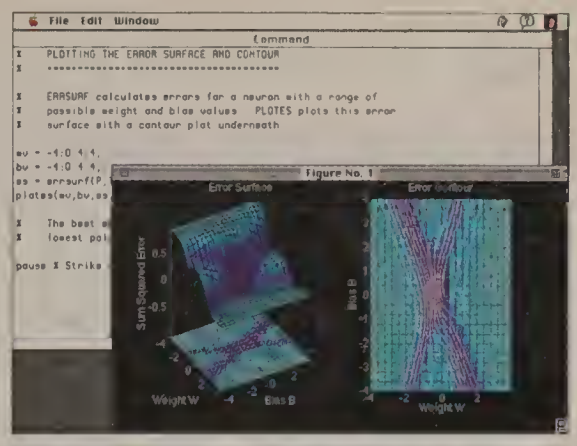
MW ★★★★

MATLAB IS THE PRINCIPAL NUMERical math system for matrix computation on platforms ranging from DOS PCs up to scientific superminicomputers. The big news in version 4.0 and higher of MATLAB is the addition, at last, of two features that have been needed for years. First, MATLAB has done an excellent job of implementing 3-D color graphics, making it the last major piece of scientific software to offer this capability. Second, The Math Works has finally introduced a proper debugging facility for M-files, the command scripts that are the basis of most MATLAB operations.

MATLAB's language is like an interpreted version of C, so it's relatively simple to implement a toolbox—a toolbox is just a set of M-file scripts and some new function definitions. Image processing, statistics, and electrical engineering toolboxes (control, signal processing, system identification) all appeared shortly after the first release of MATLAB. I looked at two new ones: the Symbolic Math Toolbox ($595) and the Neural Network Toolbox 2.0 ($895).

A Neural Network Toolbox is a natural for MATLAB, since every neural-net model is implemented as a matrix computation. Version 2.0 includes a whole megabyte of M-files (in highly compact format at that). The set covers backpropagation; perceptron learning; delta rule nets; Kohonen and Hebbian association; Hopfield recurrent networks; and nine detailed applications, including character recognition. The 400-page manual is one of the best textbooks on the subject I've seen yet.

The Symbolic Math Toolbox, instead of being yet another element in the endless repertoire of matrix computations, is a significant departure for MATLAB. Actually, it's Maple, appearing as a new set of MATLAB commands. The Math Works licensed Maple code from Waterloo Maple Software and packaged it as a standard symbolic-math toolbox and an $895 Extended Toolbox. The standard toolbox has about 60 Maple functions, including the linear algebra and ordinary differential equations sets, while the extended toolbox is essentially the full Maple package, including programming capabilities. The speed of Maple functions inside MATLAB is impressive, since MATLAB just calls Maple through its MEX gateway, and MATLAB doesn't impose much overhead of its own, being a simple command-oriented system.



Surfing the Net MATLAB's new 3-D graphics are used here to display neural-net-training progress.

The Last Word Besides offering nearly 100 new graphics commands—which give precise control over lighting, shading, and other display features—MATLAB 4.1 has improved its treatment of sparse matrices and has added commands for sound processing. MATLAB is relatively expensive, and it's not very Mac-like even in this incarnation, but MATLAB's toolboxes make it a first choice over a large range of engineering and applied-science specialties.
—CHARLES SEITER

PhotoMatic 1.01

Photoshop Utility

PROS: Automates repetitive Photoshop functions; allows batch processing of images. **CONS:** Inconsistent performance; accessing scripts in Photoshop is awkward; no way to pause a script. **COMPANY:** DayStar Digital (404/967-2077). **COMPANY'S ESTIMATED PRICE:** $199.

MW ★★★

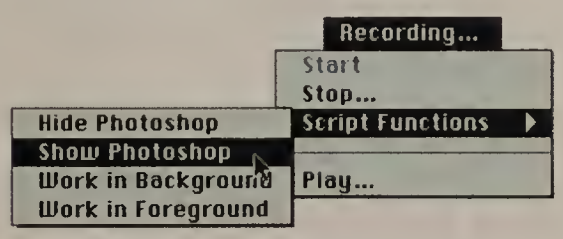
PHOTOMATIC IS AN APPLESCRIPT-based utility that lets you automate tasks in Adobe Photoshop (version 2.5.1 or later) without messing with AppleScript programming or a complex macro program. With PhotoMatic, you record a series of Photoshop commands and then use the resulting script to automatically process images.

Many Photoshop tasks *can't* be automated; tweaking an image generally requires an artist's eye. But for certain repetitive tasks, a scripting utility makes sense. For example, suppose you frequently change scanned images from RGB to CMYK and set their resolution to 166 dpi. You can easily set up a PhotoMatic script that steps through these processes automatically, saving you from the drudgery of repeatedly choosing the same commands. And because PhotoMatic can trigger these steps in the background, without opening Photoshop windows, jobs like this go a lot faster.

PhotoMatic places a Record menu in Photoshop's menu bar. To create a script, you choose Start, and PhotoMatic records your actions. When you're done, you choose Stop, and PhotoMatic then asks you to name and save the script.

You can play scripts from within Photoshop by choosing Play and opening the desired script. Unfortunately, there's no way to add frequently used scripts directly to the Record menu. (DayStar plans to add this feature in version 2.0, which should be available by the time you read this.)

PhotoMatic's real strength, though, is its ability to play scripts with Photoshop in the background and to batch-process files—performing scripts on an unlimited number of images. For batch processing, you drag the image-file icons onto the PhotoMatic icon. A dialog box appears asking which script to use. Pick the script and PhotoMatic launches Photoshop, makes duplicate copies of the images, processes them, and places them in a Done folder. You can also create folders, each containing multiple files and a script, and have PhotoMatic process each folder using the script within it.



Script Making You can set scripts to run in the foreground or background and with Photoshop windows hidden or displayed.

PhotoMatic also lets you use a remote copy of Photoshop over a network. PhotoMatic does the processing, then returns the final, processed images to your Mac.

Version 1.0 has deficiencies that limit PhotoMatic's practicality. The most significant limitation is that you can't create a script that pauses. This means PhotoMatic can automate only tasks that require no user input during processing. DayStar is adding a pause/continue feature in version 2.0.

Also, like any macro program or scripting utility, PhotoMatic requires a lot of debugging. Recorded scripts don't always perform as expected, and working out a script's kinks can eat up much of the time you're supposed to be saving.

The Last Word PhotoMatic can save you time and relieve you of some mundane Photoshop tasks, but it's a little too awkward and limited. The good news is that DayStar has promised to add features in version 2.0 that will make it much more powerful and easy to use.—JOSEPH SCHORR

Mac Keyboard Deluxe

Keyboard

PROS: Smaller and lighter than Apple's Extended Keyboard; four ADB ports. **CONS:** No tactile feedback on caps lock key; fold-down feet grate on desktop. **COMPANY:** MicroSpeed (510/490-1403). **LIST PRICE:** $125.

MW ★★★★

IT'S A SAFE BET THAT MOST PEOPLE—even enlightened Macintosh buyers—don't give a second thought to the one piece of hardware they handle most often: the keyboard. That's a shame, considering that your choice of keyboard can largely determine whether your computing experience is safe, comfortable, and efficient. And while you shop, remember that Apple isn't the only choice when it comes to keyboards.

The Mac Keyboard Deluxe's key layout is identical to the Apple Extended Keyboard's, but the Deluxe's footprint is slightly more compact. While the Apple keyboard is only an inch deeper, the difference is noticeable on a small desk like mine. The MicroSpeed keyboard is also lighter than Apple's, but it feels every bit as solid. Although I didn't assess the keyboard's long-term durability, it should stand up to routine use. (MicroSpeed says the keyboard is resistant to spills, a claim I wasn't brave enough to test.) The Mac Keyboard Deluxe comes with a one-year limited warranty and includes an ADB cable.

Although the MicroSpeed's key placement is the same as Apple's, its key switches provide slightly more resistance to finger pressure. I grew accustomed to the new keys in just a few hours; after that, the difference no longer mattered to me. My wife, Debbie, who rarely uses the Mac, said she was less likely to make typing errors with the MicroSpeed keys. (In general, I've found there's no right or wrong when it comes to key feel—the only way to tell if you like a particular design is to try it.)

The Mac Keyboard Deluxe includes four ADB ports (two more than Apple's keyboard), two of which are located at the back—useful if you like to have several ADB devices plugged in at the same time.

Unlike Apple's caps lock key, which clicks and recesses slightly when pressed, the caps lock key on the MicroSpeed keyboard provides no tactile feedback to tell you it's active. (An LED indicator next to the power key glows to show that caps lock is on, however.)

MicroSpeed's keyboard incorporates fold-down feet at the rear that provide three different tilt positions. My only complaint about the feet: the plastic tabs covering them make an annoying grating sound when they rub against the desktop—rubberized feet would be better.

The Last Word Minor gripes aside, MicroSpeed's Mac Keyboard Deluxe is well worth considering if you're in the market for a new or replacement keyboard for your Mac.—FRANKLIN N. TESSLER

RICHARD RETHEMEYER

Maxima 3.0

RAM Disk

PROS: Provides a higher-performance RAM disk and allows more Mac models to use a RAM disk than does Apple's software. **CONS:** Doesn't work with accelerated 68000-based Macs. **COMPANY:** Connectix (415/571-5100). **LIST PRICE:** $99.

MW ★★★★

RAM DISKS ARE CREATED BY A PROgram that tricks your Mac into thinking that part of its RAM is a disk volume, which shows up on your desktop just like any other disk. A RAM disk, however, operates at silicon speeds, much faster than any hard drive or floppy disk. For PowerBook owners, having the system software in a RAM disk can greatly reduce the amount of time the PowerBook hard disk is spinning, significantly boosting battery life. With the introduction of System 7, Apple built its own RAM disk software into the Memory control panel. A Maxima RAM disk has several improvements over the Apple version. First, the RAM disk created by Maxima is nonvolatile, meaning the contents of the RAM disk are automatically backed up onto your hard drive and will survive a reboot. You can also set Maxima to write-through mode, which saves to both the RAM disk and the hard disk on every Save operation. With the Apple RAM disk software, rebooting the Mac gives you a fresh, blank RAM disk. Second, Maxima uses memory-compression technology borrowed from Connectix's RAM Doubler program to double the size of the RAM disk created by Maxima. Maxima's installer copies the user-selected System Folder or applications to the RAM disk automatically. Finally, Maxima works with several older Macs that do not support Apple's RAM disk, such as the IIx and IIcx. Maxima runs under native mode on the Power Macintoshes.

Maxima's limitations are few but significant (and listed in the manual). Maxima won't work with a Mac Plus, SE, or Classic, even with an accelerator card. Only files that are limited by disk speed and not processor speed will have significant speed gains. For example, finding and sorting data in a FileMaker Pro database will be faster; but it won't speed up 3-D rendering, which depends on processor speed.

Maxima has an Easy Install option that scans your hard drive to check the size of your System Folder and your applications. It then lists all the found applications in a dialog box and asks which applications you use the most. If your System Folder is small enough to fit in the RAM disk, Maxima copies the folder to the RAM disk and makes the RAM disk the start-up disk. The next time you boot, start-up is quicker because the system software is held in RAM. If the System Folder won't fit on the RAM disk, Maxima allows you to place the most important components (System, Finder, and a few other files) in a System Folder on the RAM disk, then use aliases for things, like the Fonts folder. Maxima takes care of creating the stripped-down System Folder, but you must create the aliases to items within the System Folder and copy the aliases to the RAM disk. If there isn't space on the RAM disk for even a stripped-down System Folder, Easy Install uses the application choices you made and places as many of your frequently used applications on the RAM disk as will fit.

Connectix recommends 8MB of RAM to use Maxima, and I agree (the minimum required is 4MB). With less than 8MB of RAM, you don't have enough RAM for the RAM disk. With more than 8MB, you can allocate 4MB of RAM to the RAM disk (Maxima increases that to an 8MB RAM disk) and still have sufficient RAM to avoid out-of-memory messages.

The Last Word If you have lots of RAM (more than 8MB) and want to use some of it to speed up disk-based operations, Maxima offers an inexpensive, painless way to accomplish that goal.—TOM NEGRINO

COMPUTER DISCOUNT WAREHOUSE™

WHY PAY RETAIL? CDW® Sells For Less !

CDW® Winners Circle

XTRA VALUE

Magnavox CM2080

14" color monitor

Magnavox monitors have the features you are looking for, like anti-glare coatings, tilt/swivel bases, and up-front controls. All Magnavox monitors feature 1 year warranties, and are backed by the support of Philips/Magnavox, a worldwide technology leader.

- .29mm dot pitch
- Max. resolution: 640 x 480 @ 66.7Hz
- Front mounted controls
- Tilt & swivel base
- 1 year warranty

ONLY! **$249.31** CDW 38179

Supra Corporation

CDW TOP SELLER CDW

SupraFAXModem™ 144LC

The SupraFAXModem™ 144LC delivers 14,400 bps fax/data speeds with maximum throughput of 57,600 bps. Easy-to-understand LED display lights track modem activity. Comes complete with FAXcilitate™ 1.6, MicroPhone™ LT and CompuServe® Information Manager software, CCL scripts for ARA™, and cables.

ONLY! **$129.95** CDW 37346

DeskWriter 560C Color Inkjet Printer

ow you can enjoy the advantages of superb, high-resolution black print quality, plus add rich color to your documents easily and with no fuss. From the world leader in inkjet printing technology comes the HP DeskWriter 560C--with sharp, clear 600 x 300 dpi black printing with Hewlett-Packard's exclusive Resolution Enhancement technology. The 560C also includes advanced ColorSmart technology for clear, vivid color output, automatically.

● 600 x 300 dpi with Resolution Enhancement ● 24-bit (16.7 million) color support ● 256 grayscale levels ● Up to 3 ppm print speed ● 3 year limited warranty ● 35 TrueType scalable fonts ● AppleTalk and serial interfaces ● Prints on plain or glossy paper, transparencies, and envelopes

ONLY! **$549.77** CDW 39509

EXTRA SHARP COLOR

Sportster V.34 Mac&Fax

Sportster reliability, economy and performance!

Sportster Mac&Fax is more than just hardware and software. It's the most reliable way to send text, graphics and data right through you Mac.

V.34 is here!

✔ True V.34: transmit data twice as fast as 14, 400 bps modems ✔ High-speed protocols: V.34 (28.8K bps), V.FC (28.8K bps), V.32bis (14.4K bps) ✔ V.42/MNP 2-4 error correction, V.42bis/MNP 5 data compression ✔ 7 LED status lights, external volume control ✔ MicroPhone LT and FAXstf software ✔ 5 year warranty, made in USA

ONLY! **$248.33** CDW 45116

radius

Radius PrecisionColor™ Display/17

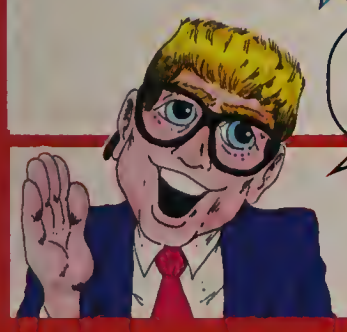
Flawless Graphics Performance at the Right Price

Radius PrecisionColor™ Display/17 is a microprocessor-controlled 17-inch Trinitron® viewing solution designed for budget-conscious creative professionals using color graphics and multimedia applications. Like all Radius monitors, the PrecisionColor™ Display/17 features the one year Worry-Free Warranty: Free overnight delivery and on-site replacement

◆ 17" vertically flat Trinitron CRT ◆ 26mm aperture grille pitch ◆ Anti-glare, dark glass picture tube ◆ Max. resolution 1152 x 870 non-interlaced ◆ Up to 75Hz vertical refresh ◆ Front panel microprocessor controls ◆ Includes Radius Dynamic Desktop software ◆ MPRII compliant, Energy Star certified

ONLY! **$1079.18** CDW 37135

PrecisionColor Pivot 15"	$816.31	CDW 29838
PrecisionColor Display/20v	$1379.87	CDW 37133
IntelliColor Display/20	$1954.19	CDW 43240



If You Find a Better Price, Call **CDW®** Before You Buy!

CDW® Sells for Less and Services You Better!

800-509-4CDW

MW1043

©1994 CDW® Computer Centers, Inc.

FREE TECHNICAL SUPPORT FOR CDW® CUSTOMERS. (800) 383-4239

CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

COMPUTER DISCOUNT WAREHOUSE™

CDW® YOUR COMPLETE SOURCE FOR MACINTOSH SOFTWARE

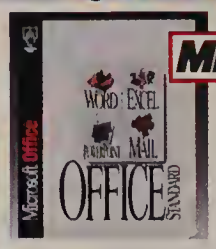
NEW!

Okidata OL410e/PS PostScript® LED page printer

A printer as creative as you are

- Complete Macintosh® compatibility out-of-the-box
- 4 ppm print speed
- 600 dpi class output (300 x 1200 dpi)
- Adobe Memory Booster™ for 5MB effective memory
- PostScript™, 35 fonts; HP enhanced PCL 5, 12 fonts
- Auto emulation switching
- 5 year printhead warranty, 1 year parts & labor

ONLY! **$938.64** CDW 44440



Microsoft Office V4.2

The latest version of Microsoft's most popular applications are now accelerated for Power Macintosh.

Word V6.0
Excel V5.0
Powerpoint V4.0
Mail license

Accelerated

UPGRADE **$262.56** CDW 45219

ONLY! **$471.41** CDW 45289

Wacom ArtZ

Advanced graphics tool

ArtZ offers professional-level performance with a tracking speed of up to 140 points per second. Use the batteryless, cordless stylus as a pen, pencil, crayon, paintbrush, or photo editing and retouching tool.

ONLY! **$286.08** CDW 37470

Connectix RAM Doubler

Just click and double your RAM easily and inexpensively with this system extension—it's compatible with all applications.

ONLY! **$54.57** CDW 36134

Kensington® Turbo Mouse 4.0

Programmable trackball for Macintosh® computers

- ✔ Greater control with smooth movements
- ✔ Trackballs stay stationary
- ✔ Programmable buttons let you choose from seven commands

ONLY! **$99.75** CDW 23958

MacDeal$™ says: "Any order $200 or less ships for only $2.99"

Call CDW today for all your Macintosh® computing needs!

800-509-4CDW

Authorized Catalog Reseller ®

TM

Top-Selling Macintosh® Software

Adobe

Dimensions	119.79
Illustrator V5.5 + CD	374.39
Photoshop V2.5.1	546.74
Photoshop V2.5.1 DLX CD	617.83
Premiere V3.0	445.25
Streamline V3.0	127.55
Super ATM	93.81
Type Basics	121.21
Type Manager V3.6	39.94
TypeSet Value Pk	38.53

Aldus

Freehand V4.0	369.52
Gallery Effects Vol. 1	125.55
Home Publisher V1.0	44.55
Pagemaker V5.0	539.29
Persuasion V3.0	309.23
SuperPaint V3.5	45.08
Aladdin SitCom	63.96
Aladdin StuffIt Space Saver	34.13
Altsys Fontographer	248.36
Ares Font Hopper	39.32
Ares Fontmonger V1.5	89.69
Avery MacLabel Pro	45.97

Broderbund

Automap Atlas	56.69
Carmen Sandiego/Time	29.26
Carmen Sandiego/World DLX	39.28
Carmen Sandiego/World DLX CD-ROM	52.91
MYST CD-ROM	47.56
Prince of Persia	29.42
The Printshop Deluxe	46.55
Typestyler V2.0	118.86
BestWare MYQB Accounting V4.0	99.63

Central Point

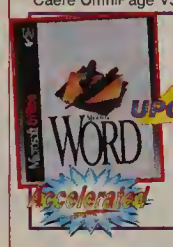
MacTools V3.0	74.30

Claris

ClarisWorks V2.1	184.24
FileMaker Pro V2.1	248.19
FileMaker Pro V2.1 Comp Upg	111.20
Impact V1.0	136.11
MacDraw Pro V1.5	248.14
MacPaint V2.0	79.23

Connectix

Desktop Utilities	55.74
PowerBook Utilities	55.82
RAM Doubler	54.57
Caere OmniPage Direct	87.11
Caere OmniPage V5.0	298.25



Microsoft Word V6.0

UPGRADE **$112.43** CDW 45379

ONLY! **311.56** CDW 45294

Dantz

Diskfit Direct V1.0	29.84
Diskfit Pro V1.1	69.58
Retrospect Remote V2.0	245.03
Retrospect V2.1	136.61

Delrina

DelrinaFax V1.5	55.39
Far Side Daily Planner	38.31
Opus & Bill Screen Svr	29.66
Dataviz MacLink+/PC Connection	114.81
Datawatch Virex V5.0	59.60
DCA Crosstalk	113.98
Deneba Canvas V3.5	252.24

Entertainment

Berkeley After Dark V3.0	29.84
Berkeley Disney Screen Svr	27.86
Berkeley Star Trek Screen Svr	28.51
Comptons King James Bible	16.60
Electronic Arts Chuck Yeager	35.74
Electronic Arts PGA Tour Golf II CD	35.70
Electronic Arts Populous CD	29.14
Interplay Battlechess	17.95
Interplay Peter Gabriel XPLORA 1	47.15
Interplay Star Trek 25th Anniversary	34.13
LucasArts Indiana Jones Last Crusade	19.87
LucasArts Loom	17.90
LucasArts Secret of Monkey Island	19.87
Maxis A-Train w/Contruct Set	29.07
Maxis EL Fish	29.13
Maxis SimAnt	29.09
Maxis SimCity 2000	39.05
Maxis SimCity Classic	23.33
Microprose Civilization	44.56
Microprose Railroad Tycoon	19.60
Paramount Jump Raven CD	39.06
Paramount Lunicus CD	38.89
Psygnosis Lemmings	34.27
Sierra Freddy Pharkas	23.82
Sierra Hoyle Classic	28.35
Sierra Kings Quest V	39.05
Sierra Kings Quest VI	44.63
Sierra Leisure Suit Larry 5	23.94
Sierra Space Quest IV	23.06
Spectrum Holo Falcon V2.2	35.28

Microsoft Excel V5.0

UPGRADE **$112.43** CDW 45378

ONLY! **311.56** CDW 45293

Spectrum Holo Iron Helix CD	56.92
Spectrum Holo Super Tetris	29.84
Spectrum Holo Tetris	23.80
Velocity Dev Spectre VR	34.19
Virgin 7th Guest CD	49.20

Fractal Design

Painter V2.0	241.71
Painter/X2	39.18
Sketcher V1.0	48.90
Farallon Timbuktu Pro V1.0	127.55
Framemaker V4.0	559.75
Golden Triangle TimesTwo	46.30
Gryphon Morph V2.0	138.99
Hayes Smartcom III V3.4	79.66
HSC Kai's Powertools V2.0	101.96

Insignia

Access PC V3.0	79.96
Soft PC V3.0	99.18
Soft PC with Windows	261.95
Solutions Pro V3.1	232.16
Inline INITpicker V3.0	44.20
Intuit Quicken V4.0	42.18
Kent Marsh Folderbolt V1.02	69.12

Lotus

1-2-3 V1.1	277.31
1-2-3 V1.1 Comp Upg	94.98
1-2-3 V1.1 Server Upg	98.76
Light Source OFOTO V2.03	189.50

Microsoft

Cinemania 1994	49.32
Excel V5.0	311.56
Flight Simulator V4.0	39.92
FoxPro Professional Upg V2.5	259.05
FoxPro V2.5	89.69
Office V4.2	471.41
PowerPoint V3.0	299.71
PowerPoint V3.0 Comp Upg	113.61
PowerPoint V3.0 Vers Upg	97.96
PowerPoint V4.0	311.56
Project V3.0	411.55
Project V3.0 Comp Upg	131.22
Project V3.0 Vers Upg	114.49
Word V5.1	299.71
Word V5.1 upg from V4.0/V3.0	113.61
Word V5.1 upg from V5.0	101.16
Word V6.0	311.56
Works V4.0	84.77
Macromedia Action Bundle	201.82
Macromedia Director V4.0	804.80
Now Software Now Up-to-Date V2.1	59.38
Now Software Now Utilities V4.0.1	77.21
QuarkXpress V3.3	569.50

Broderlund The Print Shop Deluxe

Full-featured personal desktop publishing and graphics tool

ONLY! **$46.55** 35884

Ray Dream

AddDepth V1.0	98.61
Designer V3.0	224.02
JAG II	85.43

Symantec

ACTI V1.1	156.79
Autodoubler V2.0	58.34
Disklock V2.1	119.15
Norton PowerBook Essentials V1.1	82.77
Norton Utilities V2.0	93.81
SAM AntiVirus V3.5	63.92
Suitcase V2.1	49.27
Software Ventures MicroPhone Pro	132.04
T/Maker Incredible Image Pak	79.68

WordPerfect

WordPerfect V3.0 Vers Upg	82.94
WordPerfect V3.0A	295.26
WordPerfect V3.0a comp upg	91.28

If You Find a Better Price, Call CDW® Before You Buy (800)509-4CDW

NASDAQ
BUY WITH CONFIDENCE
CDW® IS A NASDAQ TRADED COMPANY
TICKER SYMBOL CDWC
O & B Rated 4A1
Duns 10-762-7952

No Surcharge For Credit Cards

VISA · DISCOVER · MasterCard

Credit Card charges are not submitted until time of shipment. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed $4.00 per 1 package order or $6.00 per multi-package shipment. For your protection we ship only to your verified billing address. Non-defective returns subject to restocking fee. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. ™ Trademarks of all companies listed in this ad. Not responsible for typographical errors.

CDW® HOURS
Sales 7:00-9:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.
Tech Support for Customers
8:00-7:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.

Free technical support for CDW customers: 800-383-4239

WHY PAY RETAIL? CDW® SELLS FOR LESS AND SERVICES YOU BETTER!

COMPUTER DISCOUNT WAREHOUSE™

CDW

Monitors

E-MACHINES

T16II 16" color	1167.84
E20 20" color	1599.61
T20 20" color	2426.02

NEC

3V 15" flat sq	467.49
3FGe 15" flat sq	556.90
4FGe 15" flat sq	616.90
5FGe 17" flat sq	997.90
5FGp 17" flat sq	1093.20
6FGp 21" flat sq	1997.00

MAGNAVOX

CM2080 14" .29mm	249.31
20CM64 20" .31mm	999.00

SONY

15sf1 15" Trinitron	447.92
1730 17" Trinitron	947.73
17se1 17" GDM-series Trinitron	969.88

Radius

Monochrome 15" Pivot	562.65
Precisioncolor 15" Pivot	816.31
Precisioncolor 17" full pg	1079.18
20GS 20" mono dual pg	796.88
Precisioncolor 20" dual pg	1379.87
Intellicolor 20"	1954.19

RasterOps

Sweet 16" color full pg	932.66
21" mono dual pg	1088.78
20/20 20" color full pg	1496.82
21" color dual pg	2312.82
20T 20" color .30mm	1957.57

SUPERMAC

Supermatch 17T 17" color	1042.93
Supermatch 20+ 20" color	1549.56
Supermatch 20TXL 20" color	2112.67

Graphics/Video Boards

E-MACHINES

Futura SX	299.00
Futura II LX	759.94
Ultura LX	1086.01
Simply TV	373.31
Powerlink Presentor	416.05

Radius

Precisioncolor 8XJ 8-bit	456.22
Precisioncolor Pro 24XP	445.28
Precisioncolor Pro 24X	1359.82
LeMans GT	1899.87
Powerview for PowerBook/Classic	476.55
VideoVision	1512.59

RasterOps

8XL 8-bit 1MB	447.59
24MX 24-bit 2MB	487.03
24STV 24-bit	747.14
PaintBoard 8LI 8-bit 1MB	316.72
PaintBoard Lightning 24-bit 3MB	697.62
PaintBoard Turbo 24-bit 3MB XL	799.47
Moviepak2	1495.84
Mediatime	1495.84
CorrectColor Calibrator	934.67

SUPERMAC

Spectrum/8 Series III	373.17
Spectrum/24 Series IV	747.53
Thunder/8	1073.79
Thunder/24	1584.04
Thunder 24 DSP upg	497.79
Thunder II	1963.28
Thunderstorm for Photoshop	411.82
Supermatch Calibrator	333.80

Networking

ASANTE

10THUB 12 port 10BT +AUI/BNC	456.01
10THUB 8 port 10BT +BNC	231.30
Asantelite LC-10T 10BT	99.26
Asantelite NB-10T 10BT	105.76
Asantelite NB-TN Coax	112.14
AsantePrint 2001 APL Bridge RJ45/AUI	376.20
AsantePrint 1002 APL Bridge AUI/BNC	329.20
AsantePrint APL Bridge RJ45/AUI	321.05
FNTKA Transceiver AUI/AUI	64.66
FNTNA Transceiver BNC/AUI	54.57
MC+30IE64 Coax	149.27
MC+30IET64 10BT	149.47
MC3NB Combo	186.04
Mini EN/SC SCSI Combo	294.59
Mini EN/SC10T SCSI 10BT	233.16
EN/SC SCSI Combo	298.71

Dayna

Daynaport E/Z Combo	241.03
Daynaport SCSI/Link Coax	249.46
Daynaport SCSI/Link-T 10BT	249.46
Daynaport SCSI/Link-3 Combo	292.60
Daynaport SCSI/Link PB Coax	268.75
Daynaport SCSI/Link PB-T 10BT	268.75
Daynaport SCSI/Link PB-3 Combo	301.64
Etherprint APL Bridge BNC/AUI	319.02
Etherprint-T APL Bridge RJ45/AUI	299.99
Etherprint-3 APL Bridge BNC/RJ45/AUI	354.71

FARALLON

EtherWave AAUI Transceiver 10BT	94.82
EtherWave AUI Transceiver 10BT	97.86
EtherWave LC Adapt. 10BT	279.93
EtherWave LC-F Adapt. w/FPU 10BT	171.48
EtherWave NuBus Adapt. 10BT	172.57
EtherWave Adapt. (PwrBk, Classic) 10BT	282.31
EtherWave Printer Adapt. 10BT	282.32
EtherMac LC-TN Coax	102.67
EtherMac SCSI-TN (PowerBook) Coax	273.49
EtherMac SCSI-TP (PowerBook) 10BT	278.20
EtherMac SE-C Combo	146.89
Ether10-T transceiver RJ45/AAUI	53.41
Ether10-T transceiver RJ45/AUI	66.12
LocalPath V1.0 8 user	129.86
PhoneNET Connector DIN-8	27.60
PhoneNET Connactor DIN-8 10pk	186.06

Communications/Modems

Global Village

PowerPort Bronze 2400 Int.	87.55
PowerPort Silver 9600 Int.	249.90
PowerPort Gold 14.4K Int.	234.73
PowerPort Mercury 19.2K Int.	314.37
TelePort Bronze 2400 Ext.	89.84
TelePort Silver 9600 Ext.	219.13
TelePort Gold 14.4K Ext.	218.90
Teleport Mercury 19.2K Ext.	272.95
GlobalFax Duo software	75.15

Hayes

Mac ACCURA 2400	67.89
Mac ACCURA 9600/FAX96	133.31
Mac ACCURA 14.4/FAX14.4	135.54
Mac OPTIMA 2400/FAX96	122.32
Mac OPTIMA 9600/FAX96	348.92
Mac OPTIMA 14.4/14.4 Pocket	288.28

PRACTICAL PERIPHERALS

14.4 external mini-tower w/fax	118.06
28.8 V.FC external mini-tower w/fax	228.90
28.8 V.FC external w/fax, LCD	325.91

Supra

14.4K w/LCD	183.43
144LC	129.95
PowerBook 14.4/14.4 Int.	207.34

USRobotics

Mac & Fax Sportster 14.4	146.52
Mac WorldPort 14.4 Pocket	236.37
Mac & Fax Sportster 28.8K V.FC	197.38

Storage Systems

FWB

Hard Disk ToolKit Personal V1.6	49.62
PocketHammer 170MB	449.58
PocketHammer 240MB	519.91
PocketHammer 530FMF 530MB	962.71
PocketHammer 1000FMF 1.0GB	1119.55
PocketHammer 1600FMF 1.6GB	1734.44
PocketHammer 2100FMF 2.1GB	2219.74
Hammer 2100FMF 2.0GB	2359.15
Hammer 2800FMF 2.8GB	3149.86
SledgeHammer 2000FMF 2.0GB	2239.72
SCSI JackHammer	599.32
Hammer external enclosure	149.00

I-O MEGA

MacTransportable Bernoulli 90MB	339.90
MacTransportable Bernoulli 150MB	483.91

PLI

Infinity 88MB Syquest Int.	388.62
Infinity 88MB Syquest Ext.	466.17
Infinity 105MB Syquest Int.	349.67
Infinity 105MB Syquest Ext.	406.11
Infinity 270MB Syquest Int.	499.82
Infinity 270MB Syquest Ext.	559.76
Ininity external 1.3GB MaxOptical	2714.53
Infinity external 600MB MaxOptical	1377.39
PLI 44MB Syquest Cart formatted	73.41
PLI 88MB Syquest Cart formatted	107.97
PLI 105MB Syquest Cart formatted	71.24
PLI 270MB Syquest Cart formatted	103.51

CDW carries Conner, IBM, Maxtor, Micropolis and Seagata SCSI hard drives. Call for details.

Input Devices

CalComp

DrawingSlate series

6x9 cordless pressure stylus	177.09
12x12 cordless 4B cursor	206.62
12x12 cordless 16B cursor	228.53
12x12 cordless pressure stylus	459.95

HEWLETT PACKARD

ScanJet IICX	951.99

Logitech

Logitech MouseMan	63.80
Logitech Trackman II	69.78

Microtek

35T Slide Scanner	936.25
ScanMaker II	505.67
ScanMaker IIXE	874.39
ScanMaker Auto Doc Feeder	362.50

Wacom

6x8 Artz ADB, cordless pres stylus	286.08
12x12 Electrostatic, cordless pres stylus	685.96
12x12 UD-series, cordless pres stylus	483.35
12x18 Electrostatic, cordless pres stylus	996.23

Printers

HEWLETT PACKARD

DeskWriter 520	279.32
DeskWriter 560C	549.77
LaserJet 4ML	1014.51
LaserJet 4MP	1345.43
LaserJet 4M Plus	1926.00
LaserJet 4Si MX	4235.70
DeskJet 1200C	2167.20

Okidata

Okidata 410e/PS 600 dpi 4 ppm	938.64

TEXAS INSTRUMENTS

microLaser Pro 600 PS23	1355.20
microLaser Pro 600 PS65	1524.25
microLaser PowerPro 12ppm	1597.97

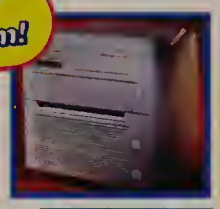
Power Backup

BC250	99.11
BC400	155.59
BC500	189.42
BC500 LAN	188.48
BC600 LAN	249.00

Smart Series-CALL!

Texas Instruments microLaser™ PowerPro

NEW 12 ppm!



The perfect printing solution for the workgroup environment

TEXAS INSTRUMENTS

- 12 ppm print speed
- 600 dpi
- 6MB RAM std., 22MB max
- High-performance 25MHz CPU
- Adobe PostScript™ Level 2, 65 fonts
- HP enhanced PCL 5
- Adobe IntelliSelect auto language switching
- Parallel & AppleTalk interfaces
- Optional network adapters
- (2) 250 sheet paper trays

ONLY! **$1597.97** CDW 44427

REBATE

EPSON

ActionScanner ES 800C

- 400 dpi
- One pass 24 bit scanning
- 16.7 million colors
- Adobe Photoshop™ V2.5
- SCSI cable

CDW® Price $1117.55* CDW 35751

Includes $100.00 manufacturer rebate 9/1/94-12/31/94

NEW!

MiTAC Removable External Cartridge Subsystems

New SQ327OA/Sd and SQ5200-based subsystems are read/write compatible with 105MB and 44MB/88MB SyQuest formats. Seek time now as low as 13.5ms.

SQ5110C 88MB 5.25"	$417.14	CDW 44325
SQ5200C 200MB 5.25"	$527.61	CDW 43442
SQ3105s 105MB 3.5"	$373.11	CDW 44326
SQ3270A 270MB 3.5"	$521.07	CDW 44327

EtherWave® Award winning innovation for 10Base-T Ethernet

Farallon

EtherWave® is 10Base-T Ethernet with a twist!

It's the award-winning daisy-chainable solution for connecting Macs, printers, and portables to 10Base-T Ethernet. Flexible and hassle-free, EtherWave lets you set up your network the way you need to and put devices where you need them-without worrying about adding hub ports or pulling more wire.

PN802 EtherWave AAUI (Apple Ethernet) Transceiver	$94.82	CDW 36488
PN801EtherWave AUI Transceiver	$97.86	CDW 36487
PN890-TP EtherWave Nu bus card	$172.57	CDW 36493
PN892-TP EtherWave LC Card	$171.48	CDW 36494
PN840-1EtherWave Mac/PowerBook Adaptor	$282.31	CDW 36489
PN842-1EtherWave Printer Adaptor	$282.31	CDW 36491

CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

CDW Computer Centers, Inc.
1020 E. Lake Cook Rd.
Buffalo Grove, IL 60089-1900

Hardware, Peripherals and Software at Discount Prices

800-509-4CDW

FAX (708) 465-6800

©1994 CDW® Computer Centers, Inc. MW1043

CALL TODAY FOR OUR FREE MACINTOSH CATALOG.

WHY PAY RETAIL? CDW® SELLS FOR LESS AND SERVICES YOU BETTER!

Circle 2 on reader service card

DESKTOP VIDEOCONFERENCING

by Matthew Leeds

WHAT IS THE INFORMATION SUPERHIGHWAY BUT A STATIONARY FORM OF TRANSPORTATION? INSTEAD OF MOVING BAGS OF CASH AROUND IN ARMORED TRUCKS, BANKS CAN CONDUCT THEIR BUSINESS BY TRANSMITTING ELECTRONIC MESSAGES DESCRIBING HOW MUCH money they've agreed to exchange. Instead of hauling newspapers out to coin boxes and corner drops in far-flung suburbs, publishers can post the news on a dial-in bulletin board. And instead of sending you to that urgent meeting across the country—where you arrive hoarse and bleary from the Thursday-night red-eye, wearing a rumpled suit and suffering from an airplane-seat crick in your neck—your employer can spend the airfare on a videoconferencing system that projects your smiling face and confident voice into the meeting from the comfort of your own office.

WITH THE RIGHT SYSTEM, YOU CAN BE IN TWO PLACES AT ONE TIME

Only a few years ago the technology for videoconferencing cost $100,000 or more, filled a room, and required satellite hookups or expensive leased data lines. Now better compression, miniaturization, faster processors, and a market expanding as fast as business travel costs climb—plus the falling price and wider availability of digital telephone lines—are bringing desktop videoconferencing, or DVC, within reach of large and small businesses alike.

However, testing here at Macworld Lab reveals that while DVC in its current state can serve a purpose, it is not going to put the airlines out of business any time soon. DVC systems are difficult to configure and get running, they provide marginally useful video quality, and they often have audio quality worse than that of a cheap speakerphone. Not only that, but despite diligent work by the international standards committees, each vendor's system can communicate only with others of the same brand, which means that you can count on videoconferencing only with members of your own organization or others who agree to install the same product your office uses.

We looked at the four videoconferencing systems currently available for the Mac: Cameo Personal Video System from Compression Labs, Connect 918 from NUTS Technologies, ShareView 3000 from Creative Labs (formerly ShareVision), and Visit Video from Northern Telecom.

We tested them between Macworld Lab and remote sites over standard analog phone lines (which most people in the telecom industry call POTS, for plain old telephone service) and over Integrated Services Digital Network, or ISDN; within the Lab we tested over Ethernet. Some videoconferencing systems support only

one of those transport methods; others support more than one. While POTS is ubiquitous and Ethernet is easily obtained if your office doesn't have it already, we discovered that, even here at the headwaters of Silicon Valley, getting ISDN lines installed, configured, and functioning was anything but easy. (For the lowdown on high-tech ISDN, see "Living with ISDN.")

Desktop Pros and Cons

There are significant differences between traditional videoconferencing and DVC. Traditional systems are usually installed in rooms designed specifically for videoconferencing, with good acoustics and lighting, no distracting backgrounds, and equipment to suspend cameras and microphones where they can cover all participants. A large monitor and full-screen images make seeing all participants on the other end no problem. And these fancy systems often support multipoint conferences—the video equivalent of a conference call.

A DVC system is usually installed in the computer that sits on your desk. Your office was probably not designed as a conference room, probably has lousy acoustics, and probably doesn't have space for a group to gather around the camera—DVC systems are ill-suited for group use anyway. In addition, currently available DVC systems don't support multipoint conferencing. On the plus side, they are considerably cheaper than traditional systems, can transfer files, and have shared applications such as a multiuser whiteboard. And the information you need for your meeting is right at hand since your own computer doubles as the videoconferencing system.

What Makes DVC Tick

One of the basic components of a DVC system is its codec, the hardware that compresses and decompresses the video and audio data—similar to the way a modem converts digital data from your computer into sounds for transfer over phone lines. The codec can be a card that installs inside your Macintosh or it can be an external box. With some systems the codec also digitizes the audio and video before compressing it, while for other systems you need a separate digitizer.

In addition to a codec you get a camera and a microphone. Like a speakerphone, the microphone tends to pick up every sound in the room, including the telephone calls and conversations of colleagues in adjoining cubes. A lapel microphone, which you can buy separately, works much better than most of the supplied microphones; the ShareView system provides a headset with earphone and microphone to isolate ambient sound.

The camera you use may depend on your application. The supplied cameras all have a limited angle of view, and spotty support for close focusing and other important capabilities; but the Compression Labs and Creative Labs systems have auxiliary video inputs that make it easy to attach another camera or video source—handy if you're trying to show videotaped material or a small object.

Depending on which transport you are going to use, you may need an interface card. For example, to use ISDN as your transport, the Northern Telecom

TALKING HEADS

Videoconferencing image quality, as well as sound quality, varies widely between products due to the efficiency and integration of the compression algorithms they use, the efficiency of network use, and the raw processor speed.

These four mug shots were captured under ideal circumstances, with minimal motion and using dedicated communication lines. Note that each product divides access to its features between menu commands and a control panel that surrounds the video window (except ShareView, which uses a separate VCR-remote window; see "Couch Potato's Videoconference").

Compression Labs' Cameo This system uses a third-party video board with accelerated 24-bit color. It's not surprising that it produces the best color of the lot. Sound quality was also ranked highly.

NUTS Technologies' Connect 918 Over Ethernet running at 384K, the Connect image shows more posterization and more pixelization than either of the products we tested over ISDN. The high frame-rate setting may be partly responsible for the degraded image quality.

Creative Labs' ShareView 3000 Considering that we tested the 3000 over normal telephone lines (the only transport method it supports), producing even this muddy, indistinct image is quite a feat of engineering on Creative Labs' part—but could you live with it?

Northern Telecom's Visit Video This was the product that Macworld Lab's panel preferred, not just for its good video quality, but also because it overcomes the unpleasant speakerphone limitation of allowing only one person to speak at a time.

and NUTS systems supply the third-party Planet ISDN card. In addition to this card, we learned, we needed an NT-1 interface between the card and the ISDN line; the NT-1 performs several functions, including providing termination and power for the ISDN line. A switched 56 line, a digital wide area network similar to ISDN, would also require special interface hardware (we did not test switched 56). If we had been working with a reseller or system integrator, he or she would have known about all of the hardware pieces and would have provided them as part of a package at installation.

DVC's Enabling Software

All the products we tested provide a phone directory that stores commonly called numbers; have the ability to transfer files to the system on the other end; can take a snapshot of incoming video; and give you control over initiating conferences and other access issues. This last is designed to save you the embarrassment of suddenly realizing that someone has been watching your every move.

All four DVC systems provide a whiteboard feature, that is, a drawing application that allows participants at both ends of a conference to draw or scribble remarks on a shared blank screen. The data resides on only one machine; the other just receives an image of the data. So if both parties want to keep a copy of the whiteboard session, the host must transfer the finished drawing.

Some products support screen sharing, which differs from the whiteboard in that it lets you show your guests an open document in any application; some, but not all, DVC packages let the guest modify the remote document using its application's features. For programs that don't support this kind of sharing you must paste a screen capture into the whiteboard. Some products can record the video and/or the audio of your meeting session to disk.

ShareView 3000

The Creative Labs ShareView 3000 package includes two NuBus cards—one a combined codec and digitizer, the other a transport card that is essentially a fax modem (it comes with fax-modem software as well)—a color video camera; and a telephone handset and headset. The ShareView runs only on POTS—standard phone service—and the line attaches to the transport NuBus card along with the handset and headset. The camera attaches to the codec/digitizer card. This second card is thicker than a standard NuBus card; and on the Mac II, IIx, and IIfx it blocks the slot next to it.

The camera supplied with the ShareView 3000 is very small and light, and it's designed to sit on top of your monitor. Creative Labs includes a bracket for mounting the camera there, but we found the device virtually useless. The bracket's camera-angle adjustment would not lock correctly, and the camera gradually slipped out of alignment every time we tried to adjust it. In addition, the camera has a manual focus and manual iris, requiring you to get within arm's length to adjust them even though you'll normally sit farther away than that. This makes accurate focusing impossible without a second person to assist.

MARK JOHANN

The Eyes Have It Cameras supplied with videoconferencing systems (clockwise, starting at noon): Creative Labs' ShareView 3000; Northern Telecom's Visit Video; Compression Labs' Cameo Personal Video System; NUTS Technologies' Connect 918.

The ShareView's software provides a whiteboard, screen sharing, and file transfer, and can record video and audio to disk, take screen snapshots, and convert recordings to QuickTime.

ShareView does not save shared documents at the remote site, so you must remember to transfer a shared file after you're done with it. The remote site cannot use the menus of a shared application; guests share only the document. Floating tool palettes from the ShareView application itself don't appear on the guest's screen, but they can obscure portions of the shared document.

Connect 918

The NUTS Technologies Connect 918 package comes with a NuBus card, a camera that contains a microphone, and a speaker. There are different versions for ISDN and Ethernet, and Connect 918 does not include the necessary interface for ISDN. This means that to connect to ISDN you'll need to use a second slot in your Mac (as you will for Ethernet if your Mac lacks on-board Ethernet). Except for when you initially position the camera, which is no problem, the camera and speaker are hands-off: their controls are incorporated into the software.

The Connect software provides a phone directory, a log that records the duration and cost of calls, screen sharing, screen snapshot, file transfers, and a whiteboard. The Connect can display an inset of what your camera sees inside the window showing the participant at the other end—a feature called picture in picture—and can record a session and convert it to QuickTime. The guest has complete access to a shared application's commands and the contents of its windows. Shared documents are not saved at the remote site and must be transferred, but whiteboard documents are saved at both sites.

Cameo Personal Video System

The Cameo system is the only system we tested that may not require any slots in your Mac. Its codec is an external box, and if you have an AV Mac, the Cameo can use the AV's special hardware to digitize the video—and the audio if you need it. The Cameo can run over Ethernet at a maximum throughput of 56K using the AV Macs' built-in Ethernet, but unfortunately, when doing so the Cameo does not support audio. Since the Cameo doesn't tie up your phone line, you could pick up the telephone and call your colleague down the hall as you look at each other's face on-screen.

With a non-AV Macintosh you will need to add a video-digitizer card; for switched 56 or ISDN, you need the appropriate communications interface as well. The Cameo's optional camera is fixed-focus with an electronic iris and has a mounting bracket with an adhesive patch that makes for a very secure attachment. The codec connects to the Mac's serial port and to the video port on your video digitizer. The codec has an auxiliary video-input port that could support a camcorder or VCR.

The Cameo's software includes a diagnostic utility to test that your hard-

ware and software are properly installed and that the external codec is functioning correctly. The Cameo also provides the usual phone directory, picture in picture, screen snapshot, screen grabber, whiteboard, and file transfer. The video portion of a call stops during a file transfer.

Visit Video

The Northern Telecom Visit Video comes in many different configurations. There are gray-scale and color versions, and versions that support most transports. We tested the color version over ISDN. It comes with a NuBus video card that includes the color codec as a daughterboard, an ISDN card, and a camera. The camera perches on top of your monitor and has zoom, pan, and tilt controls in software. (You can substitute any NTSC device such as a camcorder or VCR, but the software controls work only with the Visit camera.)

A major difference in the Visit package is its ability to interface with some PBXs—not surprising, considering that Northern Telecom is one of the world's largest suppliers of digital telephone systems. In this kind of installation, the Visit can control your phone and your voice mail. You can dial with the mouse, keypad, or keyboard, or from the telephone-directory software. Call-information can be stored in a call log. All voice-mail options, including call forwarding, call parking, and conference calling, can be controlled from your Mac. (We did not test these features, but they could add considerable value if your telephone system supports their use.)

The Visit has the best phone directory of the lot, with elaborate features for managing entries. You can maintain multiple directories, sort directory entries, add custom fields to a directory, attach memos to directory entries, and perform searches on directories. The file-exchange feature runs in the background, allowing other functions such as the videoconference and the whiteboard to continue. Documents created in the whiteboard exist on only one machine and must be sent to the other machine if they are to be saved there.

With the Visit you can't share your applications' screens, but you can grab a screen and place it on the whiteboard for the other party to view. You can also open a text chat window.

Comparisons and Test Results

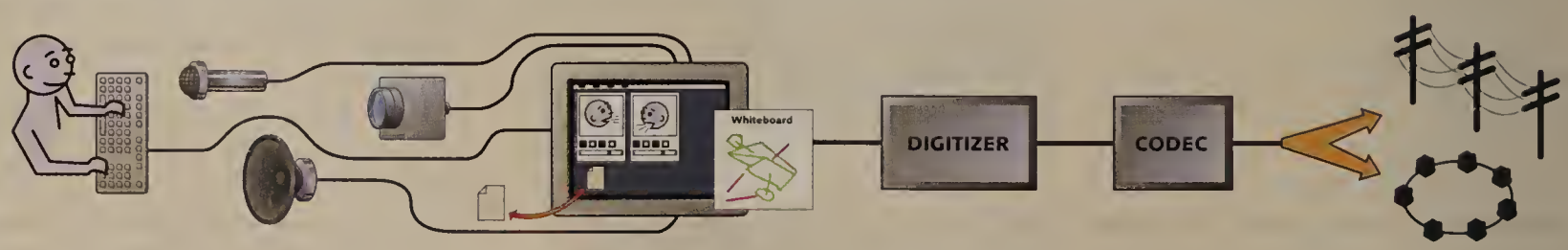
We assembled a panel of reviewers to look at each system running on Mac Centris 650s running System 7.1, with 14-inch monitors set to 16-bit color. The panel rated each system's video and audio quality from one to five, with five being the best and one the worst. The panelists rated the video based on distracting image-quality problems such as jerky motion, tearing (a broken or fragmented image indicating that the DVC system or the network is too slow to transmit a complete frame at the desired speed), pixelization (large, blocky groups of pixels that indicate where individual pixels have been combined), and posterization (a sharp reduction in the number of colors, which is a common technique for compressing an image). We planned to provide precise frame rates for each product under different circumstances, but we were not able to make accurate measurements of frame rates. In any case, it turned out that frame rate alone is not a major factor in the perceived quality of the video. We did note that none of the products was able to maintain an acceptable frame rate when there was a good deal of motion in the video image. This is not surprising: just as the system reduces the amount of data it must transmit by stripping out redundant color information to compress the image, it also strips out redundant location information by not resending parts of the image that haven't moved between frames; therefore, the more motion, the more information that must be sent for each frame.

We rated audio on sound quality and on synchronizaton between audio

Couch Potato's Videoconference ShareView's interface is designed to look like a VCR remote control; and unlike controls for the other three products, ShareView's are in a separate, movable window instead of in the same window as the videoconferencing image.

The Smart Shopper's Guide to Videoconferencing

Videoconferencing (VC) integrates hardware and software of several discrete computing systems. Until standards become widely accepted, make sure that all components in your system work together well. (Illustration shows only one side of a VC link.)



Input and Output
All Mac VC systems display talking heads on the Mac's monitor. For the microphone, camera, and speaker, they may use off-the-shelf, built-in, or custom components. Look for good components or the ability to substitute better ones.

Software
Good software is what makes a VC system worth using. Is it easy to look up a colleague's number and initiate a connection? Can the software transfer files and display spreadsheets or sketches? How sophisticated is its electronic whiteboard?

Digitizer
The digitizer (with codec) is VC's soft underbelly: digitizing multiple data streams in sync for real-time transmission is tricky. Some weak systems digitize with QuickTime, which was designed to digitize onto storage media and can't handle real-time synchronization.

Codec
A compressor/decompressor squeezes bulky data to fit narrow digital networks. As the digitizer sends it data, a well-designed codec strips away only the information—color depth, object edges, motion—that someone on the other end is least likely to notice.

Communication
Circumstances will determine your network type. Will you conference with others in your office? If so, Ethernet is your only choice. Will your conferencing go outside the office? If so, ISDN—if available at both sites—is superior to standard phone lines.

Desktop Videoconferencing Systems

System	Cameo Personal Video System	Connect 918	ShareView 3000	Visit Video
Price	Ethernet $1499 [A]; ISDN $2500 [A]	Ethernet $4299; ISDN $5899	POTS $3999	ISDN $5319 [B]; POTS $4499 [C]
Vendor	Compression Labs	NUTS Technologies	Creative Labs	Northern Telecom
Phone	408/435-3000	408/441-2166	408/428-0330	214/684-4206
Toll-free phone	○	○	800/998-5227	800/667-8437
Warranty	1 year	1 year	1 year	1 year parts, 90 days labor
Tech support	free (toll call)	free (toll call)	free (toll call)	free (toll-free call)
Transports PBX	POTS, switched 56, ISDN, Ethernet	ISDN, Ethernet	POTS	POTS, switched 56, ISDN, Meridian 1 PBX
Handset/headset	○/○	○/● [D]	●/●	○/○
Auxiliary video input	●	○	●	○
Camera controls	fixed focus, auto iris	manual focus, auto iris	manual focus and iris [E]	fixed focus, auto iris; zoom, pan, tilt in software
Software features				
Shared whiteboard	●	●	●	●
Transfer files	●	●	● [F]	●
Phone directory	●	●	●	●
Picture in picture [G]	●	●	○	○
Screen sharing [H]	○	●	●	○
Connection timer	○	●	○	●
Control frame rate	○	●	●	○
Control data rate	○	●	●	○
Record video to disk	○	●	●	○
Record audio to disk	○	● [I]	●	○
Screen snapshot	●	●	●	●
Security features				
Control session start	●	●	●	●
Control session recording	NA	●	●	NA
Pause (audio/video)	●/●	●/●	●/●	○/●
Control screen sharing	NA	●	○	NA
Control file transfers	●	●	○	●
Control snapshots	○	●	●	●

● = yes; ○ = no; ISDN = Integrated Services Digital Network; LAN = local area network; NA = not applicable; POTS = plain old telephone service. [A] Requires separate digitizer (except with AV Mac). [B] Includes NT-1 interface. [C] Modem not included. [D] Includes speaker and Jabra Earphone. [E] Includes mounting bracket. [F] Also transfer folders. [G] Local user appears as small inset in remote user's image. [H] View or control applications on remote Mac. [I] Not without video.

and video. Audio can get out of sync with video because it generally travels over a separate path. For example, the systems that use ISDN as a transport don't digitize and send audio and video together in a big lump: they send the two data types separately, using ISDN's multiple data channels. Videoconferencing systems generally require more time to digitize, compress, and decompress video than audio, and so the video may lag behind the audio.

We present the ratings as averaged totals of the video and audio scores; they represent a subjective evaluation of the audio and video quality of each system. We ran the Ethernet tests on a dedicated network with no other traffic. We ran the POTS tests on *Macworld*'s internal phone system, and they should be considered a best-case scenario. We ran the ISDN tests over newly installed ISDN lines provided by our local carrier.

CAMEO: tested over ISDN.
Rating: 4 The Compression Labs product got favorable marks from our reviewers. It requires a third-party video-digitizer, and the high-performance RasterOps 24STV is the recommended board. This board works in 24-bit mode, and we were able to test only in that mode. As a result, the Cameo's video looked a bit cleaner than that of the other products. The frame rate was only about 12 frames per second, but the audio sounded as good as a regular phone call. The user interface was also one of our favorites.

CONNECT 918: tested over Ethernet.
Rating: 1 The NUTS product lost points due to poor video and especially poor audio. Since the Connect 918 allows the user to set the frame rate, we experimented and found that the system gives the best results at around 15 fps. The video seemed to stutter at times when there was a lot of motion, yet appeared smooth at other times with the same amount of motion. One reviewer described the audio as "the worst phone connection ever heard," and we determined that clear audio is much more important than clear video for comfortable, efficient use of videoconferencing. We were also disappointed that the Connect system—even when set to transfer data at 384K, the maximum slice of an Ethernet's bandwidth it can use—performed worse than the ISDN products, which were limited to the two 64K channels we had installed. Finally, we found the phone directory difficult to understand and use.

SHAREVIEW 3000: tested over POTS.
Rating: 2 Like the NUTS product, Creative Labs' product lost points on video. Panelists complained about its low frame rate (about 7 fps), broken-up images, and lack of clarity. The standout comment

was that "the image quality couldn't be used in the real world." On the audio side, only one person could talk at a time, but the sound quality ranked about the same as a normal phone call. The low rating is mostly a function of the system's reliance on POTS as a transport, since it runs over 14.4-Kbps modems. In addition, the camera controls are difficult to use, the screen- and window-sharing features are confusing, file transfers stop the video image completely, and the whiteboard is difficult to use.

VISIT VIDEO: tested over ISDN.
Rating 4 The Northern Telecom product got very favorable marks from our panel. The overall image quality and audio quality were considered the best of the bunch. While there was some stutter or jerk in the image when there was a lot of motion, the Visit recovered faster than did any of the other products. The frame rate was about 12 fps. The audio uses full duplexing, which allows both parties to speak and hear at the same time. The software-controlled camera is a nice touch, though rarely used in practice. The software is missing some features, but this may be balanced by the voice-mail features that we did not evaluate.

LIVING WITH ISDN

Integrated Services Digital Network transmits digital data like an office network does, but is supposed to be as simple and ubiquitous as the telephone. ISDN, available in parts of this country, Europe, and Japan, is currently the only viable long-distance digital dial-up network, so to test videoconferencing products for this article we asked our local phone company to install ISDN at Macworld Lab in downtown San Francisco and at the home of a Lab technician. Our experiences suggest that ISDN can fit the bill—but don't expect it to be as easy to use as snapping a telephone into a modular jack.

ISDN's main disadvantage is spotty availability. We soon discovered that ISDN was not available in our technician's San Francisco neighborhood, forcing us to change plans and establish our remote site in Berkeley. Before investing in VC equipment, make sure ISDN is available at both ends.

ISDN provides two 64-Kbps B channels, which can be configured for both channels to carry data, or for one to carry data and the other voice; and a 16-Kbps D channel for control signals. (In some places ISDN can run 23 B channels in parallel for approximately 1.5-Mbps throughput.) An ISDN installation includes a network terminator, or NT1, which provides power for the ISDN line, terminates the line, and performs other low-level tasks; a terminal adapter, or TA, which sets up the digital connection to the exchange; and an ISDN board to interface to your Mac. Not all VC systems include these pieces, which can run about $800, so take their cost into account when comparison-shopping.

The phone company will charge about $400 to install your ISDN, about $50 a month to operate it, and, of course, extra for long-distance calls. Here's a hint if you plan to do long-distance videoconferencing: use the same long-distance carrier at both ends of your ISDN connection. This will simplify tech support a great deal.

Waiting for the Wire

Getting ISDN installed and operational can take time. The phone company may require two to three weeks just to run a line to your site. When the workers get there, make sure they install the proper jack: at our Berkeley site they installed an RJ-11—a regular telephone jack—instead of the required RJ-45. Once we got that straightened out, we discovered that they'd given us the wrong SPID number—the ISDN equivalent of a phone number—for the San Francisco line, and we lost another day or two waiting to learn the right number. Finally, we were ready to test the VC systems—or so we thought, until we found that none of the VC systems worked over our ISDN line. To avoid wading through normal service procedures, we called a friend at the phone company, who quickly determined that both B channels had been set for data and switched them to one voice line and one data line. Our advice on this: make friends with the engineers at your phone company.

ISDN Catch-22

Even if everything goes smoothly, the phone company will need to know how to configure the ISDN line for your VC system. But before the VC vendor can provide a system, it will need to know how the phone company configures the ISDN line. To circumvent this sand trap, tell both parties that (1) you need one B channel for data and one for voice, (2) the signaling D channel must be set to active, and (3) ringing must be set to on.—**Danny Lee**

Important Factors to Shop For

In picking a DVC system there are many things you should consider. Clearly, poor video is more tolerable than poor audio, up to a point. The microphone quality is important, as is the speaker or headset. If users will be sharing a system, ease of use becomes more important. Consider if you'll need shared applications or just a whiteboard. Will you need to attach an auxiliary video source?

Where you set up your DVC system is also important. If you're not using a headset, you need a quiet location; otherwise, background noise will interfere with your conversation and lower video quality by flooding the transport medium. The lighting at your site is also important for video quality.

Just as with E-mail, there is a definite feel to using DVC that sets it apart from the telephone. The addition of a moving image provides an element of presence, though the small image size and poor image quality tend to mute that feel. The video and audio are often out of sync, and if you focus too much on the video image you get a surreal feeling, as if your conversation were taking place at the end of a long tunnel.

The Last Word

Given the poor quality of the video and audio, you may consider the shared whiteboard and screens of more use than the videoconferencing aspect of these systems. There are several products that provide those features without the talking heads of desktop videoconferencing. Until the image size and quality improve we can't recommend any DVC system for general use, but in some instances they offer greater benefits than remote-control programs like Timbuktu (Farallon, 510/814-5100) or whiteboard programs like Face to Face (Crosswise, 408/459-9060) and Vis-a-Vis (World Linx, 416/350-1000). If you do decide on DVC, determine which product has the best software for your needs, and check out the audio and video quality carefully, under controlled circumstances, before making your decision. Remember that our ratings are based on the audio and video quality, and do not reflect the feature set or ease of use. **m**

MATTHEW LEEDS is the technical services manager for a major software developer. His responsibilities include network management, WAN technology, and digital-video production.

Introducing a printer for those who have ideas bigger than this page.

The HP DesignJet 650C/PS printer. Large-format at a small price.

$8,995*

Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2′ by 9′ (up to 3′ by 9′ with our larger model**). Right in your office. Right away. No tiling. No hang-ups. No problem. Just clean, inkjet output with PANTONE®†-licensed colors. Adobe™ PostScript™ Level 2 software and a built-in RIP are included. For an output sample, call **1-800-354-7622, Ext. 8277.**

HEWLETT® PACKARD

Circle 11 on reader service card

*Suggested U.S. list price. **Larger model lists at $10,595. †Pantone, Inc.'s check-standard trademark for color. Adobe and PostScript are registered of Adobe System Inc. which may be registered in certain jurisdictions. ©1994 Hewlett-Packard Company PE12410

ABSOLUTE OPTICAL.

WARNING: Optical General has determined that storing information on magnetic media could be hazardous to your data.

ALL TRADEMARKS AND REGISTERED TRADEMARKS OF THEIR RESPECTIVE OWNERS. THE BOTTLE DESIGN IS A REGISTERED TRADEMARK OF V&S VIN & SPRIT AKTIEBOLAG
V&S VIN & SPRIT AKTIEBOLAG HAS NEITHER SPONSORED NOR APPROVED PINNACLE MICRO'S PRODUCTS NOR IS IT AFFILIATED, CONNECTED OR ASSOCIATED WITH PINNACLE MICRO

ABSOLUTELY PINNACLE.

There is absolutely no doubt that optical is *the* storage solution for the future. And Pinnacle Micro is *the* optical storage leader. Our complete line of award-winning optical products will satisfy your thirst for storage. Optical is fast - Faster than most hard drives. Optical is removable - Fill up a disk... replace it with another one. Optical is reliable - No data loss. No head crashes. Even better, optical media costs as low as 15 cents per megabyte!

Now you can store unlimited amounts of data for endless applications such as graphics, imaging, networking, digital audio, digital video, server storage and data archiving. Pinnacle's wide range of optical storage solutions will increase productivity in every environment, from personal computing to the largest global network.

TAHOE™ 230 MB OPTICAL DRIVE

3.5" 230 Megabyte, 28 msec access, removable, portable optical storage system for both notebook and desktop computing.

SIERRA™ 1.3 GB OPTICAL DRIVE

5.25" 1.3 Gigabyte, 19 msec access optical hard drive storage system. Provides unlimited capacity with removable media for primary storage, secondary storage, and data archival.

RECORDABLE CD (RCD) SYSTEM

Affordable, recordable CD-ROM system that allows users to create their own multimedia titles, data backup, archives and custom audio CDs.

NETWORK OPTICAL LIBRARY SYSTEMS

Storage systems ranging from 20 Gigabytes to over 1 Terabyte of high-performance centralized network storage. Also ideal for Hierarchical Storage Management (HSM) applications.

ORRAY™ 5.2 GB OPTICAL DISK SERVER

19 msec effective access, RISC based storage server that provides 4 MB/sec sustained data throughput for vertical applications such as network storage, digital audio, and digital video.

PINNACLE OPTICAL MEDIA

Removable, inexpensive, high performance optical media with up to a 30-year shelf life.

• 3.5" 128/230 MB MO media • 5.25" 650 MB/1.3 GB MO media • RCD 74 minute/680 MB recordable CD media

PINNACLE SERVICE & SUPPORT

As the leader in Optical storage systems, Pinnacle Micro is dedicated to providing the best service and support. Our 100% optical focus has allowed us to live up to our trademark as "The Optical Storage Company."

So the next time you are considering purchasing a hard disk or tape system, think again. Your choice is clear - Pinnacle Micro. Absolute storage.

To order or for a local reseller call: 800-553-7070

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY

Tel. 714-727-3300 Fax 714-789-3150

Circle 115 on reader service card

OpenDoc & OLE 2.0

Two technologies vie

by Galen Gruman

Monolithic programs will soon be a thing of the past; people will instead choose small, manageable tools to work on their documents. People will have a simple way of working with the computer, akin to selecting from screwdrivers and wrenches, not learning to operate a crane.

That's the vision Microsoft offers with its Object Linking and Embedding technology, or OLE. (The ability to call one program from another is called linking, and the ability to put a piece of data—an object—into a foreign program is called embedding, thus the name OLE [pronounced *oh-LAY*].) It's also the vision promised by OpenDoc, under construction by Apple and a consortium of other companies including WordPerfect (recently renamed the Novell Applications Group), IBM, and Lotus Development Corporation.

No longer need you worry about file importing and data exchange. You want a table in your page layout? Just drag a table from your spreadsheet or word processor. Have a picture in your presentation that you want to colorize? Just click on the picture, and the menus and palettes change to those you need for graphics. Even better, this approach has the potential to reduce the seemingly endless amounts of RAM and disk space that today's programs devour.

Two things make OpenDoc and OLE 2.0 possible. One is object technology, which lets a computer manage components (whether tools or data) independently, no matter how they are presented on screen. The other is a *document-centric* approach to objects. In today's application-centric systems, you think of your data in terms of the program that created it; in the document-centric scheme, you think of data in terms of its purpose—a layout, a presentation, a report.

The Object Evolution

The idea of multielement documents is hardly new. Apple introduced publish and subscribe with System 7 in 1991, and Microsoft introduced OLE 1.0 with Windows 3.1 in 1992 (and ported to the Mac shortly thereafter). Even before that, programs such as Aldus PageMaker and QuarkXPress maintained links to component elements: if you edited a graphic used in a layout, the publishing program would update the placed graphic the next time you opened the layout. Integrated software programs—the Works programs from Claris, Microsoft, and others—supported multielement documents, although only using Works-generated components.

And today, with System 7.5's Drag Manager and Clippings extension, you can drag pieces of documents to documents in other programs or even to the Finder—as

long as the originating and receiving programs are compatible with these system extensions and the receiving program supports the type of data being dragged into it, whether it be a TIFF image or a WordPerfect table. (It's just import without using an import dialog box.)

What makes OpenDoc and OLE 2.0 different from these earlier approaches is the fact that almost everything you use would be—or at least could be—a multielement document. The scheme would work the same across all programs and tools—even across Windows and Mac platforms, enabling you to embed a database object from a Windows program in your Mac publishing program, for example. You still won't be able to run that Windows program from your Mac; instead, OLE or OpenDoc will look for a Mac program that can handle the database object. If no such program is present, the data remains intact but cannot be altered (though it can be deleted or moved within the document).

OpenDoc and OLE 2.0 have significant similarities, but don't mistake them for two versions of the same thing. Their differences are at least as significant as their similarities, and whichever technology dominates may well chart the future course of how both programs and the operating system itself work.

OpenDoc Unveiled

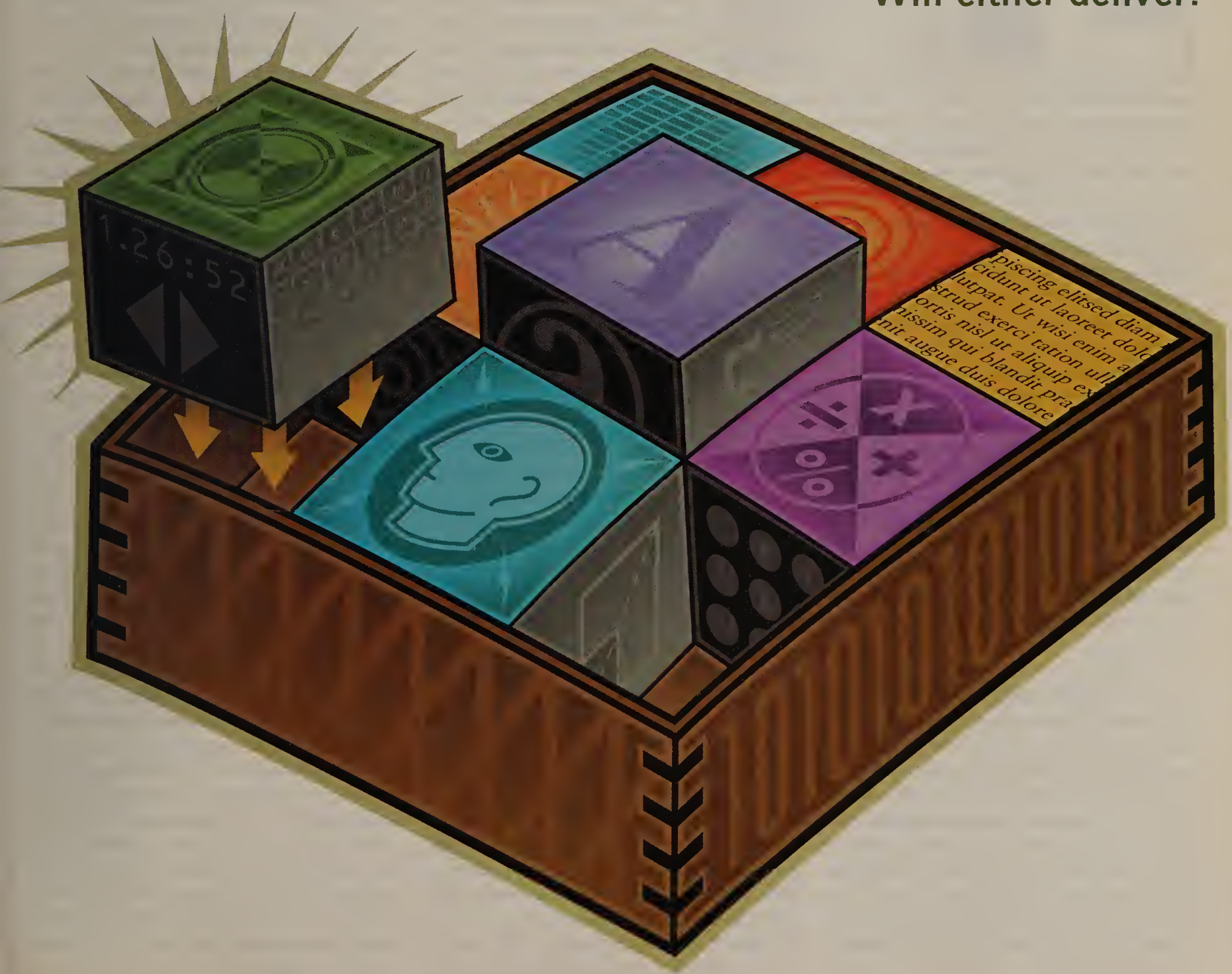
Apple is banking on OpenDoc to be the core interface of the next generation of software. Although the company is keeping mum on its next-generation operating system (code-named Copland and due in late 1995 or early 1996), Apple has made clear that OpenDoc will be part of that future. And in the meantime, Apple plans to release OpenDoc in winter 1995 for use with System 7.5.

How does OpenDoc work? Imagine that after you double-click on a document icon, the document appears along with a basic set of options like Print and Copy. There are no Save or Export or Import menu options—or, for that matter, Font or Style or Image or Record, either. But when you click on a block of text, Style, Format, Font, and Edit menus appear. Select a graphic, and the menus change to Image, Crop, Color, and Background. Select a QuickTime movie, and the options change again, this time to Play, Edit, and Sound. To move elements between documents, you just drag them over.

Life will be simple: you just work with the documents you have and let the system worry about providing the needed

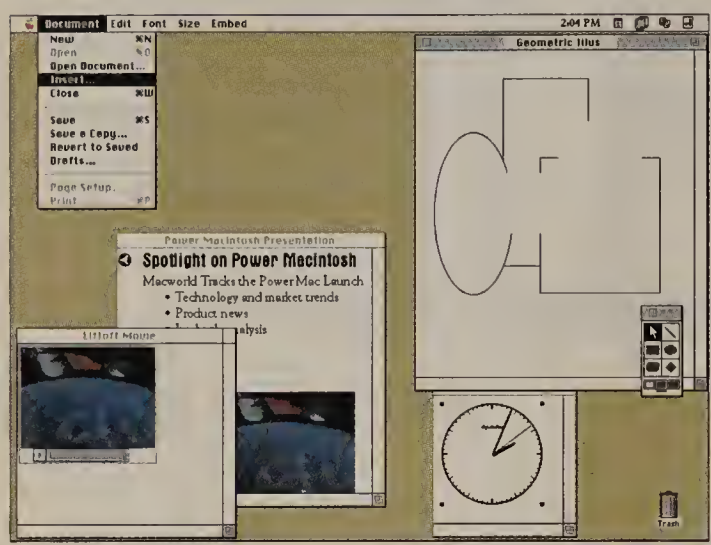
to replace today's bloated software with nimble components.

Will either deliver?



tools for each type of data. This is an ambitious goal. OpenDoc will need to know which tools are appropriate for which kinds of objects, and it will need to know what kind of object is selected (see the screen image "OpenDoc Collection").

If OpenDoc is organized around documents, how do you create a new one? OpenDoc provides two ways. A New command creates a container (an invisible structure that holds all of a document's objects). You then drag objects into the container or use the Embed command to select the tool needed to create the desired object. (The Embed command can also work like today's Import command to bring in data or load a tool that can create the needed type of data.) The other way to begin is to open a stationery document of the type you want (such as a report or presentation) and build on it.



OpenDoc Collection The OpenDoc approach gets rid of the program approach—gone is the File menu—and treats everything as a document containing collections of objects. When you select an object, OpenDoc figures out what tool to load to work with it.

Eventually, OpenDoc should support tool-to-tool communication; this would let, for example, a database tool sort records and pass the results on to a layout tool, which would then run a script to format the information. To do this, however, OpenDoc will need to use IBM's Distributed System Object Model technology, and OpenDoc's developers say it will not be implemented in OpenDoc's first release.

One goal for Apple is to make OpenDoc capable of handling OLE 2.0 objects and links—a tacit acknowledgment of the fact that Microsoft's OLE 2.0 is going to be successful enough to matter. (After all, practically all Mac owners use Word and Excel, whose latest versions support OLE 2.0.) Microsoft has expressed a distinct lack of interest in supporting OpenDoc. OpenDoc development was not far enough along at press time to see whether OpenDoc's promised OLE 2.0 compatibility is a reality.

OLE 2.0 Explained

Microsoft's OLE 2.0 is less ambitious than OpenDoc. Rather than getting rid of application-specific documents, OLE tries to make applications share data more easily. OLE 2.0 lets you embed pieces of data (tables, text, images, movies) created in other programs in the currently open document, no matter what program created that document. When you select an embedded piece, OLE 2.0 launches that piece's creating application and brings up the appropriate menus and tools. (This is called *in-place editing;* you have the context of the host document, even though you have essentially switched to a different program to work with it.)

Thus, if you have an Excel spreadsheet in your Word document, Excel's tools appear whenever you select the spreadsheet, and Word's tools reappear whenever you select the text (see the screen image "Two Programs in One"). But even with embedded objects from other programs, the document remains in essence a Word document, and double-clicking on its icon will launch Word.

Under OLE 2.0, both programs are active in memory. That means you need systems with at least 16MB or so to comfortably handle large programs like Word and Excel simultaneously.

Object Technologies Compared

OLE and OpenDoc have some welcome similarities, but also real differences.

Drag and Drop Both technologies support drag and drop across programs, which makes it easy to exchange data.

In OLE, the dragged data is embedded in the new location unless the new location directly supports the dragged data's format. For example, dragging a chart from Excel into Word embeds a chart object in the Word document, and you edit the chart via an OLE 2.0 link to Excel. But dragging text from Excel into Word just moves the text to Word, since both Excel and Word can directly manipulate text.

OpenDoc treats the dragged data, whether chart or text, simply as another object in the document.

Plug-in Support Both OLE and OpenDoc encourage the plug-in approach to software design, where capabilities can be added to an existing program (or tool collection).

In OLE 2.0, you're made more aware of the fact that you're plugging in a new capability, because you must explicitly link to or load the program that can handle the object or capability.

OpenDoc more transparently links objects to their respective tools, so you quickly forget about separate programs and begin to think of them as different tools within the Mac. It's as if the Mac itself becomes the biggest integrated software program ever invented. OpenDoc will also permit you to add tools that plug into existing tools, similar to the way filters plug into Adobe Photoshop and XTensions work with QuarkXPress.

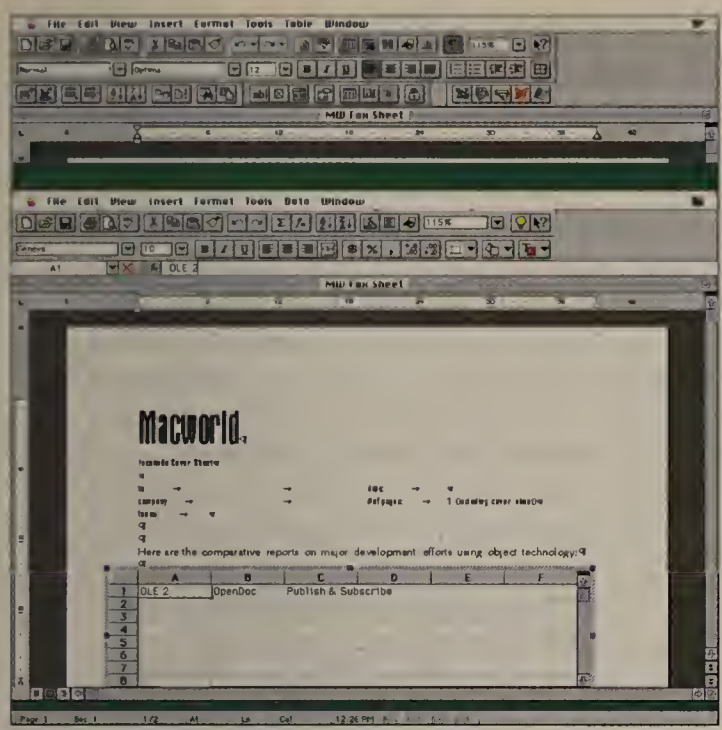
Preferred Tools If you don't own the tool that created an object, or if you simply prefer not to use it, both technologies let you manipulate the object with a different tool. OpenDoc goes a step further by letting you define preferred tools for types of objects, so the system offers you those tools automatically; but this feature was not implemented in the prerelease version I had. OLE 2.0 requires you to explicitly ask for a different tool.

Contextual Feedback In a document-centered environment, feedback about what menus and palettes are available will be highly important.

OpenDoc's pointer changes to the appropriate tool as you pass over an object, giving you instant feedback on the type of object and the type of tool that will manipulate it. This feedback helps you distinguish object types as you work on a series of them, though you don't need that information to edit the object. In fact OpenDoc simply switches to the appropriate tool when you click once on an object. This can lead to more switching than necessary, but fortunately, OpenDoc's fast switching means this is not a burden. Microsoft's OLE 2.0 programs display a message in their status windows when your mouse passes over an OLE object telling you that double-clicking on the object will open a particular program. OLE 2.0 switches tools only when you double-click on an object, so you're less likely to accidentally switch tools. Microsoft says developers can implement single-clicking as a way to select an object, although having two methods could be confusing.

Common Look-and-Feel A collection of tools that look and act differently can confuse users, and developers need to ensure that basic expectations are consistent from tool to tool. To encourage consistency, the OpenDoc consortium has developed a set of interface guidelines.

For OLE 2.0, Microsoft is encouraging consistency by using its Office programs—Word, Excel, and PowerPoint—as a model. These programs look and act very similarly, and by giving developers an Office-compatible rating for OLE 2.0



Two Programs in One The OLE 2.0 approach treats a program as the owner of a document but lets you embed objects created by other programs into the document. When you select an embedded object, OLE 2.0 launches the program that created the embedded object to let you edit it in place.

components, Microsoft hopes to encourage more widespread consistency. However, Microsoft's Office interface is not quite the same as that of either Windows 3.1 or the Mac, so consistency with Office may not mean consistency with, say, other Mac programs or Windows programs from companies other than Microsoft.

Text Wrap OLE 2.0 requires objects to be in rectangular frames, which poses limits on the placement of objects. For example, PageMaker or QuarkXPress would not be able to use OLE 2.0 to replace standard graphics and text import, since that would remove the two publishing programs' ability to do circular or polygonal text wrap or to have overlapping objects. OpenDoc has no such limitation.

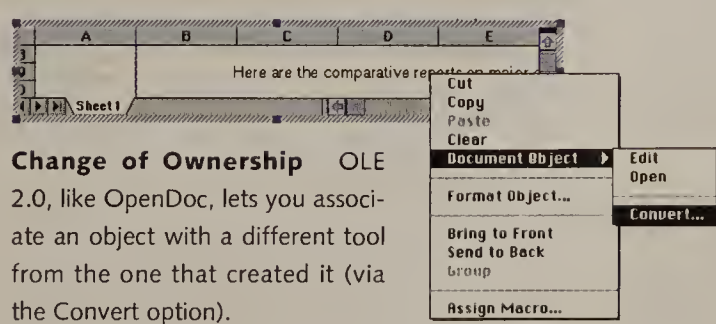
Scripting OLE 2.0 works with Microsoft's cross-platform scripting language, Visual Basic for Applications. VBA lets you tie OLE 2.0–compatible programs together to automate tasks and even develop your own extensions to a program.

OpenDoc relies on the system to do its scripting, so tools will need to support AppleScript on the Mac and VBA on Windows (unless Apple ports AppleScript to Windows, something it has not committed to doing).

Sharing and Multiple Drafts OpenDoc lets users maintain several drafts of a document by storing multiple versions of objects within a document's container or linking those versions to it. That should aid collaborative work such as getting comments on a proposal—even from several users simultaneously. OLE 2.0 has no draft or sharing capability, but it does let you open linked programs over the network. OpenDoc works only on a single machine.

Which Is Better? OpenDoc is a simpler scheme than OLE 2.0. OpenDoc aims to get rid of huge, memory-hungry programs and help users focus on documents. Even better, OpenDoc's trim and efficient scheme is speedy and elegant, capable of maintaining multiple drafts and supporting nonrectangular object boundaries. By contrast, OLE 2.0 requires lots of RAM or lots of patience. To drag and drop data between documents you must have enough RAM to keep several programs open at once; otherwise, you'll be waiting while OLE launches the program you need to do each piece of in-place editing separately.

The reality is that the long-term success of either technology will be based on how well it integrates with the user's operating system. Both Microsoft and Apple are working on future versions of their operating systems that will do just that—Microsoft's Chicago and Cairo, the code names, respectively, for Windows 4.0 and Windows NT 4.0, and Apple's Copland, the code name for System 8. If both companies succeed, OpenDoc will have an advantage on the Mac that Microsoft will be hard-pressed to duplicate by grafting OLE 2.0 onto Copland; but under Chicago and Cairo, OLE 2.0 will have a comparable advantage over OpenDoc. Despite the two companies' best efforts, it's likely that the operating system you choose will ultimately determine the object technology you use, no matter how much better the competitions' capabilities are.



Change of Ownership OLE 2.0, like OpenDoc, lets you associate an object with a different tool from the one that created it (via the Convert option).

Possible Pitfalls

Although object technology has the appeal of simplicity, it's far from clear whether the initial appeal will last.

Are Documents Better Than Programs? Apple claims that people don't think of programs but of documents—you mentally say, "I need to work on the 1995 budget," not "I need to load Excel to work on my 1995 budget." That's true for many people, but many others think, "I need to do some 'what-if' financial scenarios. Let me get the tool to do it." Document-centrism makes sense when you're editing an existing document, but task- or program-centrism make sense when you're creating a document.

That's not to say that OpenDoc's document-centrism will preclude a task emphasis. You'll still be able to open, say, a text document and select a tool to accomplish a graphics task by using the Embed feature. How developers implement OpenDoc will play a large part in determining whether users feel like they're working with a set of tools or with a collection of stray pieces.

And OpenDoc will coexist with today's programs. You can use, for example, a database program for data analysis and a collection of OpenDoc tools to create reports. At worst, to get database information into your report, you'd need a tool that could extract the needed data from your database file.

How Open Is Open? Although the name OpenDoc might imply otherwise, developers could easily write OpenDoc tools that wouldn't work (fully or at all) with other companies' tools. A tool could create objects in a way that would limit access by other tools. Essentially, an object would make public only a limited set of information about itself.

Microsoft says OLE 2.0 does not present a similar possibility, since it is designed so tools can essentially ask an object about itself. Microsoft compares this to two people trying to settle on a common language—"Do you speak English? *Nej. Parlez-vous français? Nej. Sprechen zie Deutsche? Gut!*"—so they can speak with each other. (Apparently, objects can't lie.)

A developer may choose to implement proprietary tools to encourage customers to buy all their tools from one source, or it may limit object support simply because supporting the many types of data and tools will be too hard. For both technologies, being open does not mean being universal.

Object Technology at Work

I don't expect object technology to be the dud that publish and subscribe was. But neither do I see traditional programs going away.

Enhancing Today's Programs In fact, I expect developers to use this technology to enhance traditional programs.

Developers can add capabilities to popular programs, as plug-ins do for Adobe Photoshop and XTensions do for QuarkXPress. OLE 2.0 makes the most

OPENDOC VERSUS OLE 2.0: A FIRST LOOK

Object technology is shaping up to be a battle between competing visions: Apple and friends' OpenDoc and Microsoft's OLE 2.0. While many of the key issues on who will win this battle are political rather than technical (see *State of the Mac,* in this issue), how well the two schemes work is what the ultimate judges—you, the users—will care about. To gauge the strengths of the two technologies, I worked with a very early version of OpenDoc and a final version of OLE 2.0.

OpenDoc Crashes were extremely common, which limited my ability to use OpenDoc for more than a few minutes consecutively. Nevertheless, it's clear, even from the limited number of sample tools provided by Apple, that OpenDoc can work well for compound documents. Switching tools was fast, even at this early stage of development. And I particularly enjoyed the ability to drag objects between documents.

Where I had the most nontechnical difficulty was in document creation. OpenDoc does a good job of making you forget about applications, so starting something new felt unnatural. Sure, I could start with a blank piece of stationery and drag in elements or use the Embed command to load a tool to create them, but that felt like more work than just opening a program dedicated to a particular purpose. I expect, though, that this unease will diminish as I adjust to working in a new way.

OLE 2.0 After using OLE 2.0 with late betas of Microsoft Word 6.0, Excel 5.0, and PowerPoint 4.0, it was clear to me that OLE 2.0 works as a way of creating compound documents. Its embedding works a lot like Word's picture-import feature: serviceable but slow. However, dragging data between OLE 2.0–compatible programs was smooth.

Do expect, however, a noticeable slowdown as you switch between, say, an Excel object and the Word text it is embedded in so you can do in-place editing. With the prerelease versions, the delays were sometimes excruciating. Microsoft expected to remove much of the delay during final fine-tuning, but no amount of fine-tuning can change the fact that you must switch between two big programs in memory. After all, I experienced noticeable delays when working with OLE 2.0 on a 33MHz 80486DX-based PC (which is about as fast as a Quadra 800); and the Windows version of OLE 2.0 has been shipping for half a year, so it's been optimized for best performance. On the Mac, expect the kind of delays you get now when using MultiFinder to switch between Word and Excel.

sense for this, since it extends from programs' existing architectures.

Developers of large, multifunction programs can develop separate components for each set of functions and then update components without revising the entire product. Basically, OpenDoc and OLE 2.0 give developers the chance to make more effective suites, since object technology makes it easier to change components and add plug-ins. Both OLE and OpenDoc make sense for this, although using OpenDoc means writing the programs practically from scratch.

Tentative Steps There are a few early signs that developers are starting to implement the object approach for at least some types of programs.

One example is Visio Express for Microsoft Office, a scaled-down version of the Windows-based Visio flowcharting tools. The Visio Express version is essentially an OLE 2.0 plug-in—similar to the Microsoft Graph, Equation Editor, and Movie, OLE-based plug-in modules that come with Microsoft's Office programs.

Another example is Aldus ChartMaker (available now in a Mac version, with a Windows version promised). It's just a small chart-making program, but Aldus is positioning it as a plug-in to larger programs, even though the only interactions ChartMaker provides are the standard OLE 1.0, publish-and-subscribe, and copy-and-paste interactions. What's different about ChartMaker is that Aldus has adopted the tool concept rather than the full-application concept.

The plug-in approach makes sense for many types of tools. For example, do you really need a separate spelling checker for every program? Using OpenDoc or OLE 2.0, a developer could provide a universal tool. That'll save disk space and make your spelling dictionaries consistent. A module for mailing data directly from your programs is another example. A universal table editor is a third. But for other programs—like databases, which aren't really documents but redefinable views of information—the traditional program-centric approach makes sense.

Drag-and-Drop Future Object technology also has the potential for making drag and drop a more commonplace operation. First, operating systems like the Mac and Windows implemented it for files and programs. Then programs like word processors started supporting drag and drop internally. Now, with either OLE 2.0 or OpenDoc, you'll be able to drag and drop data between programs, whether or not the program can directly manipulate the data. Many Windows developers are already using OLE 2.0 this way to achieve cross-program compatibility, and I suspect Mac developers will follow suit.

When's the Revolution?

If object technology appeals to you (or even if it's something you *don't* want) the question is, Will object technology become part of your reality, and if so, when? Probably not soon.

OLE is real—version 2.0 ships with the latest versions of Microsoft's Office programs, which include Word, Excel, and PowerPoint—but it now works only with these programs and the utilities bundled with them (such as Equation Editor, TextArt, and Microsoft Graph).

OpenDoc is still under development. While Apple and WordPerfect have committed to using it, other developers are waffling. Privately, many say they'll support it only by supporting OLE 2.0, which OpenDoc is being designed to interact with.

Both technologies are new, so don't expect a revolution overnight in how you interact with your Mac. They first must gain acceptance, and that's not a foregone conclusion, since developers remember the pain of developing for System 7's publish and subscribe, only to see almost every user avoid it. Even OLE, which has been around for over two years in the less-capable version 1.0, has been adopted slowly outside of Microsoft.

Object technology will likely play a notable role in future software. If developers do the right thing, OpenDoc will prevail in a way that simplifies programs without sacrificing capability. At worst, we'll have further domination by a few suites that require 64MB of RAM and 2GB hard drives. But all the hype notwithstanding, object technology appears to be an evolution, not a revolution. **m**

GALEN GRUMAN is a *Macworld* senior associate features editor who focuses on new system-level hardware and software technology.

For more information, just mail this card.

(From wherever in the world you are.)

Get a real global perspective on things from CompuServe, the world's largest and most comprehensive computer information network. Almost two million people, from all over the world, will have plenty to say to you about any topic you can think of.

So for more information, just mail this card or call **1 800 848-8199.**

Name _____ Company Name _____

Address _____

City, State _____ Zip _____

(_____) _____
Day Phone

(_____) _____
Evening Phone

CompuServe®

Mac World/Nov.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

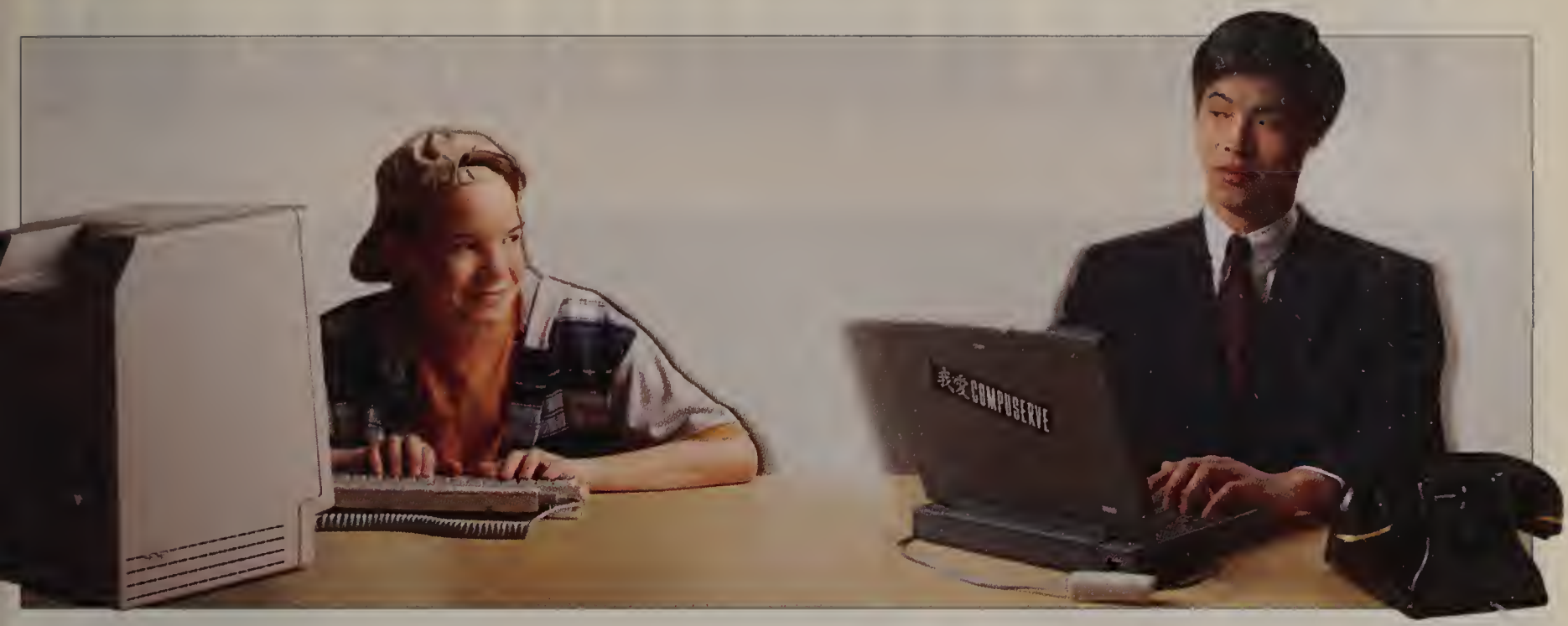
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

POSTAGE PAID BY ADDRESSEE

CompuServe®

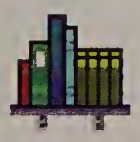
NEW MEMBER DEPARTMENT Mac World/Nov.
PO BOX 20961
COLUMBUS OH 43220-9988



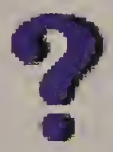
Any computer information service that has a place for everyone from a skateboarder in Wichita to a bond trader in Hong Kong certainly has a place for you.

On CompuServe, there's room for everybody. Over two million members, in fact, all around the world. People ranging from 12-year-old rock aficionados to members of the Hong Kong stock exchange, all of them taking advantage of more than 2,000 different things to do.

On CompuServe they can swap information, fax business reports, flirt, answer questions, argue about politics — just plain communicate faster and easier with more people than ever before. They can get facts and figures for their homework, do business background checks while they're at work, or figure out which airline rate is the most economical. CompuServe is also known for its downloadable freeware and shareware. And has technical support representatives online, too, to answer questions, along with "regular" people who have been using just about every kind of equipment there is.



Maybe you should join the crowd. CompuServe is just $8.95 a month for unlimited connect time — day or night — to a full package with more than 70 basic services. News, stock quotes, travel arrangements, movie and restaurant reviews, and 60 e-mail messages a month are just some of what's available. Along with many other services for nominal additional charges.



For more information or to order, just see your computer dealer, call **1 800 848-8199** (614 529-1349 for international inquiries), or fax us at 1 614 457-0504. You'll find out how easy it is to get in touch with more than two million friends that you don't know yet.

CompuServe®

The information service you won't outgrow.

Circle 66 on reader service card

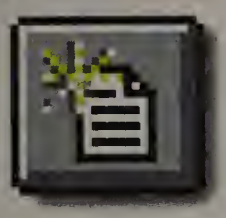
NOW AVAILABLE IN

WORD PROCESSOR.

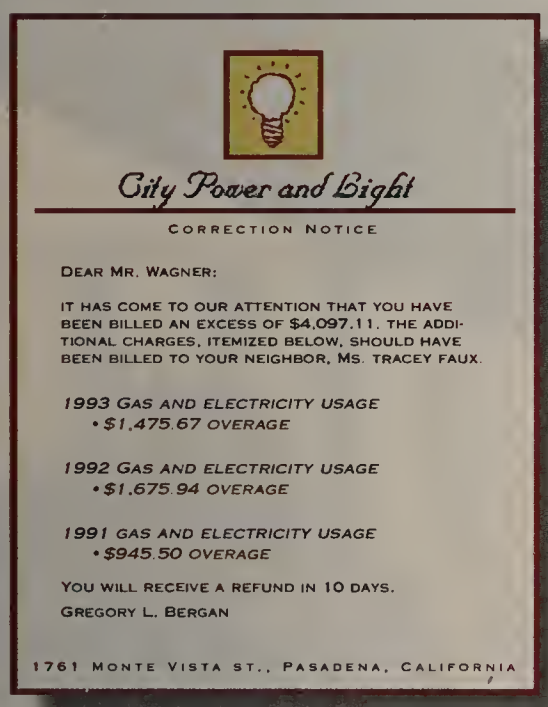
New Microsoft Word 6.0

For those of you who ever wished that a computer could do more to make your work easier, we have some refreshing news: Your wish has been granted.

Introducing new Microsoft® Word 6.0 for the Macintosh® and Power Macintosh™.



While it would certainly be much easier to explain our improvements as some kind of magical hoo-ha, in truth it's merely superior technology at work.



City Power and Light

CORRECTION NOTICE

DEAR MR. WAGNER:

IT HAS COME TO OUR ATTENTION THAT YOU HAVE BEEN BILLED AN EXCESS OF $4,097.11. THE ADDITIONAL CHARGES, ITEMIZED BELOW, SHOULD HAVE BEEN BILLED TO YOUR NEIGHBOR, MS. TRACEY FAUX.

1993 GAS AND ELECTRICITY USAGE
• $1,475.67 OVERAGE

1992 GAS AND ELECTRICITY USAGE
• $1,675.94 OVERAGE

1991 GAS AND ELECTRICITY USAGE
• $945.50 OVERAGE

YOU WILL RECEIVE A REFUND IN 10 DAYS.

GREGORY L. BERGAN

1761 MONTE VISTA ST., PASADENA, CALIFORNIA

To change the look of your document, just click on the AutoFormat button and Microsoft Word will automatically format it.

We refer to it as IntelliSense™ technology. Built-in intelligence that automates routine tasks and makes complex tasks simple.

For instance, who amongst us doesn't invariably mis-type certain words? Now, our AutoCorrect feature can correct common mistakes automatically as you type. That goes for those pesky capitalization errors too.

Teh

The

AutoCorrect can fix common typos as you make them.

But that's just the beginning. AutoFormat lets you instantly apply a variety of formatting options to your documents with a mouse click. Want to make it a memo? A letter? A newsletter? Your wish is our command. Just click on a new style from our Style Gallery.

This technological wizardry is also evident in something we call Table AutoFormat. To format tables, just point and click on any of the 34 different styles.

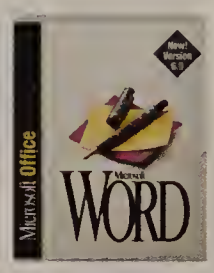
But what's truly magical about new Microsoft Word 6.0 is how it works with other Office programs. It's never been easier to exchange text, data and graphics between programs. All you have to do is just drag it and drop it into place.

As if that weren't the epitome of sharing, you can share Word files between Macintosh and Windows™ without conversion.

To find out more, just visit your retailer or call (800) 871-3273, Department RUA.

Either that, or start searching for a lamp inhabited by one of those subservient spirits in a fez.

Microsoft Word 6.0 is the latest version of the world's most popular word processor for the Macintosh. It's also part of Microsoft Office family.



Microsoft Office

© 1994 Microsoft Corporation. All rights reserved. Microsoft Office, shown here, includes: Microsoft Excel, Word, the PowerPoint® presentation graphics program and a Mail workstation license (server and software must be acquired separately). For information only: In the 50 United States, call (800) 871-3273, Dept. RUA. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers who are deaf or hard of hearing can reach Microsoft text telephone (TT/TDD) services by calling (800) 892-5234 in the United States or (905) 568-9641 in Canada. Microsoft and PowerPoint are registered trademarks and IntelliSense and Windows are trademarks of Microsoft Corporation. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Companies, names and/or data used in screens and sample output are fictitious unless otherwise noted.

THE BRANDT MULTI-METRIC
KODAK
MATCH Prestige 21
FUJI
53762

by Charles Seiter and Tim Warner

MW LAB

Macworld Lab evaluates 22 two-page displays for graphics professionals

BIG SCREEN CLOSE-UP

IF YOU FIND YOURSELF SCROLLING around pages of your work all day—and what designer or artist doesn't?—you'll likely find that buying a bigger monitor is more helpful than buying an accelerated video-display board to speed up the scrolling. After all, you need to scroll less if you have a bigger canvas.

Fortunately, these bigger canvases are getting more affordable—street prices range from $1200 to $3100. Two-page color monitors aren't getting cheaper as fast as Macintoshes are getting cheaper, but prices *are* dropping. For example, Apple Computer's current 20-inch offering costs about $2200—about a third less than its 21-inch product two years ago—and even a bargain-oriented company like MacUSA's Mirror division has dropped the prices for its line by about $500 in that period, a 20 percent drop.

And where there used to be huge price gaps—sometimes a couple thousand dollars—between products, there is now fairly uniform pricing. That's because the state of the art in blowing the giant glass tubes needed for 19- to 21-inch two-page monitors advances rather slowly and has been mastered by only a handful of companies. Many of the monitors we review here, for example, use tubes manufactured by just one company: Hitachi. And most Trinitron-based monitors use tubes made by Sony.

Three kinds of Mac owners will especially benefit from two-page monitors: publishers, graphic artists, and engineers and scientists. Publishers who don't work much in color may prefer a gray-scale monitor instead of color (see the sidebar "Gray Is Cool"), but most artists and designers do work routinely in color, as do many high-end publishers. Engineers and scientists have specialized big-monitor color requirements (see the sidebar "Displays for Rocket Scientists").

Measuring the Rainbow

The big mainstream application for these monitors in the Macintosh world, however, is color graphic design and image manipulation. For these jobs, color quality, uniformity, and color calibration are particularly important.

Macworld Lab put 22 two-page monitors through our standard set of critical tests and also performed perceptual evaluations. Typically, the perceptual evaluations echo the test results—monitors that show a pink or green cast in subjective

< Apple's Multiple Scan 20 Display (top) is a great pick for most graphics and publishing professionals. Image editors and others with exacting color-matching needs should buy SuperMac Technology's PressView 21 Display System (bottom).

judgment give off-center white-point measurements in color-space tests—but the perceptual evaluations have the advantage of translating the objective measurements into what counts most for a user: how the monitor actually looks.

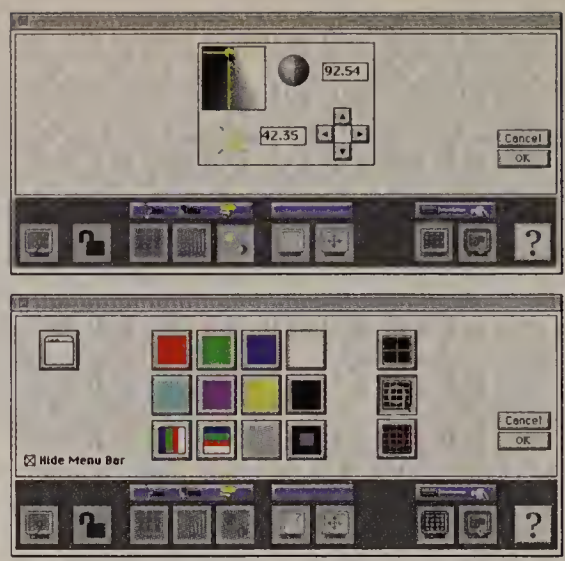
We also talked with graphic artists to learn what they find critical in a monitor for their day-to-day work. This testing and research point to six basic buying-decision issues, ranked here in order of importance.

Size Some of these monitors are listed as 20-inch-diagonal and some as 21-inch. In reality, they all display a 19-inch-diagonal viewing area, plus or minus a small fraction of an inch. Some vendors—Focus Enhancements, for example—offer a nominal 21-inch monitor that shows a smaller viewing area than their own 20-inch units. That's because the vendors are reselling monitors (albeit with slightly different electronic specifications) from different tube manufacturers, who have their own way of labeling the tubes. Pay less attention to the monitor's claimed size than to what you see on the screen.

Quality The range of image quality for these monitors runs from good to great in almost every case. None of the units looks twice as good as another in the set, according to our expert panel. All the manufacturers know the same phosphor tricks and mask technologies; and they use every trick they know for both Trinitron and tridot (also called Invar shadow mask) monitors.

Still, you'll find that different monitors look, well, different. In fact, you will find about as much variation within a set of monitors from the same company as you will within a set of products from several companies. Even if you were to line up ten examples of the BigView Model 21 from XYZ Corporation, they would have different across-screen variations in color purity and different levels of color cast (tint). This is a strong argument for seeing the actual monitor you will buy at a dealer.

Controls The controls on these monitors represent the whole conceivable range of control ergonomics. The Finnish firm Nokia Display Products shows the rest of the world how it should be done. There are two buttons on the front of the Nokia monitor, Select and Adjust. These manage a set of choices that appear on screen for controlling details of picture geometry, focus, and color. Idek Iiyama North America has a more complex but still convenient control system, in which a little drawer full of buttons and indicator symbols pulls out of the bottom of the set. Nanao USA Corporation plans to add



Calibration Controls SuperMac offers sophisticated color-calibration controls for its PressView monitor, which is aimed at photo retouchers. Two options are brightness controls (top) and geometry adjustments (bottom). The controls can be daunting to learn, but their interactivity is excellent.

on-screen controls in its new FlexScan T2•20 monitor; its FlexScan F series, reviewed here, doesn't include them.

By contrast, Mitsubishi offers a set of tiny *multifunction* LEDs and buttons in the true spirit of the 137-button handheld VCR control. The controls work, and you can tune up the company's Diamond Pro 21T as long as you have the manual open in your lap to page 16, but if you lose the manual the controls become very difficult to use. Mitsubishi plans to offer software controls this fall.

As with input devices, different people prefer different types of controls. Most people—including the graphic arts professionals we consulted—use monitor controls rarely (typically, just at the initial setup), so you shouldn't give excessive weight to a monitor's controls. All are functional.

Plug and Play The Macintosh market is smaller than the Windows market for most monitor makers, even though Mac owners proportionally use more two-page monitors (thanks to the graphic-arts and publishing community). To sell to the Mac market, the PC-oriented companies include or sell separately an adapter cable that lets the PC-style video connector plug into a Mac. In many cases, Macworld Lab—which tests about 100 monitors a year—had difficulty figuring out the proper adapter settings. What should have been a 30-second operation sometimes took 10 minutes. You may safely assume that if a vendor is willing to send a monitor for review to *Macworld* with the wrong settings, it won't hesitate to do the same to you.

You'll see PC bias in software as well. For example, NEC Technologies sent us color-adjustment software that runs only on a Windows PC, although Mac software is promised for late 1994. Other vendors sent us documentation that chirped on merrily about SVGA and other PC matters, with nary a mention of the Macintosh. The traditional Mac vendors (Apple, Radius, RasterOps Corporation, and SuperMac Technology) of course do a better job with cabling, setup, and software than vendors for whom the Mac is an incidental business and something of a nuisance.

Resolution switching Now that Macintoshes support multiple resolutions, you can increase your working area (although at the price of smaller images) or zoom in on it (at the price of a smaller window on your desktop). We did our testing at 1152-by-870-pixel resolution, the setting that lets you display two 8½-by-11-inch pages side by side at near-actual size. However, there are situations (conference-room display, for example) where you would want a two-page monitor to be simply a very big one-page monitor at 640-by-480-pixel resolution.

Price A monitor needs to offer a good value. For layout and graphics-placement use, expect to spend about $2000. If you do demanding color work

Two-Page Monitors Compared

Company	Phone
Apple Computer	408/996-1010, 800/775-2775
Focus Enhancements	617/938-8088, 800/538-6000
Idek Iiyama North America	215/957-6543, 800/394-4335
Ikegami Electronics USA	201/368-9171
MacUSA Mirror division	612/832-5622, 800/654-5294
Mitsubishi Electronics America	714/236-6352, 800/843-2515
Nanao USA Corporation	310/325-5202, 800/800-5202
NEC Technologies	708/860-9500, 800/632-4636
Nokia Display Products	415/331-0322, 800/296-6542
Radius	408/434-1010, 800/227-2795
RasterOps Corporation	408/562-4200, 800/729-2656
SuperMac Technology	408/541-6100, 800/334-3005
ViewSonic	909/869-7976, 800/888-8583

* CEP = company's estimated price; DP = direct price; LP = list price.

If you're using a Mac professionally and your output won't be printed in color, you are likely to find a two-page gray-scale monitor to be less expensive and more suitable for your applications. For monochrome or two-color publishing of books, magazines, or newsletters, a gray-scale monitor is ideal.

Text on all gray-scale monitors looks great. There are none of the color-fringing problems on text from misconvergence that occur with color monitors, since there's only one electron-beam gun lighting up the phosphors. Many graphics professionals claim that a gray-scale monitor is easier on their eyes in prolonged use than are the best color monitors.

Gray-scale monitors are a relatively specialized item compared with color monitors—the choices here represent the small range available in late summer 1994. Expect that range to get smaller, since diminished sales have prompted many companies to drop their monochrome lines. For example, Mobius Technologies has only a few hundred left and has no plans to make more.

• Focus Enhancements (617/938-8088, 800/538-8865) acquired Lapis Technology last year and dropped the price of the 19-inch Lapis Two Page Display to $599.99. But it's not clear how long these monitors will be available at such a low price. (It looks to be an inventory close-out.)

• MacUSA's Mirror division (612/832-5622, 800/654-5294) has a two-page (19-inch) gray-scale monitor for $699. If you're setting up a publishing operation on a limited budget, this model combined with a low-end Centris would be quite effective.

• Mobius Technologies (510/654-0556, 800/523-7933) also offers a $699 19-inch monitor, the Two-Page Display GS. It features a low-curvature, low-glare screen.

• Nanao USA's 21-inch FlexScan 6500 (310/325-5202, 800/800-5202) supports resolutions up to 1664 by 1200 pixels. At Nanao's suggested price of $1119, it's essentially the gray-scale version of the color FlexScan F760i•W reviewed here.

• Radius (408/434-1010, 800/227-2795) produces both 20- and 21-inch gray-scale monitors, the $999 Two-Page Display/20gs and the $1199 Two-Page Display/21gs. Both use the built-in video on Quadra and Centris Macs to display 256 gray levels at 1152-by-870-pixel resolution.

• Sigma Designs (510/770-0100, 800/845-8086) offers the MultiMode 150 for high-end publishing users. At $1349, the 150 offers resolutions as high as 2048 by 1536 pixels (150 dpi) and can switch to black-and-white display.

Gray-scale monitors, such as this Mirror 19-inch, are ideal for some publishers.

—Charles Seiter

Product	Price *	Mac Adapter	Tube Type	Perceptual and Operational Comments	Technical Support
Multiple Scan 20 Display	$2149 CEP	not needed	Trinitron	Bright; sharp text; Multiscan software worked fine.	unacceptable
LapisDisplay 20i	$1899 CEP	included	tridot	Lacks sharpness and purity.	acceptable
LapisDisplay 20t	$2099 CEP	included	tridot	Sharp text, but had geometry problems; adapter incorrectly set.	
LapisDisplay 21i	$2100 CEP	included	Trinitron	Clear, sharp display.	
Vision Master MF 8621	$2495 LP	$35 option	tridot	Color purity off, but text is crisp; adapter incorrectly set.	poor
C/N 20A	$1999 LP	$19.95 option	tridot	Good contrast; sharp text.	very good
C/T 20A	$2495 LP	$19.95 option	Trinitron	Sharp, bright display.	
ProView 20T	$1999 DP	included	Trinitron	Odd tinting; adapter not preconfigured.	poor
ProView 20V	$1399 DP	included	tridot	Geometry problems (keystoning, wavy sides); adapter incorrectly set.	
ProView 21	$1999 DP	included	tridot	Good picture.	
Diamond Pro 21T	$2399 LP	free option	Trinitron	Confusing controls, but good picture once adjusted; separate cables for each resolution.	acceptable
FlexScan F760i•W	$2069 CEP	$15 option	tridot	A favorite. sharp text; fairly bright appearance, adapter not preconfigured.	acceptable
FlexScan F780i•W	$3259 CEP	$15 option	tridot	Sharp text but screen appears dim; adapter incorrectly set.	
MultiSync 6FGp	$2125 CEP	free option	tridot	Slightly green cast; squashed menu bar.	excellent
Multigraph 445M	$2475 LP	included	tridot	Slight purity problems in corners; uses on-screen menus for adjustments.	excellent
Multigraph 445X	$3225 LP	included	tridot	Same as 445M, except for slight focus problem.	
PrecisionColor Display/21	$2499 LP	included	tridot	Appears dim; nonuniform brightness; easy setup.	very good
20/20 Multimode Color Display	$1869 LP	included	tridot	Good color purity, brightness, and text; tube shape is bulbous.	acceptable
SuperMatch 21TXL	$2599 LP	not needed	Trinitron	Bright; sharp despite some distortion at side.	acceptable
PressView 21 Display System	$3999 LP	not needed	tridot	Excellent display after complete calibration; best color-control software; very flat tube.	
ViewSonic 20	$1795 LP	free option	tridot	Blue cast and low contrast, which reduce perceived brightness.	very good
ViewSonic 21	$1995 LP	free option	tridot	Image bowing; greenish cast; adapter not correctly set.	

that requires color matching and calibration, expect to spend about $2800. When looking at the prices in the table, "Two-Page Monitors Compared," keep in mind that the price differences there are exaggerated—the $2600 difference between the cheapest and the costliest is more like $1900 if you compare street prices. For monitors with good quality, the price spread is about $1000.

For example, Focus Enhancements' LapisDisplay 21i lists for a relatively modest $2100 and is sometimes sold as low as $1999, while SuperMac's PressView 21 Display System has the grand list price of $3999 but sells for $2400 or so from a dozen sources.

Judging Image Quality

The overall image-quality range in these monitors is fairly small because they are produced by a handful of manufacturers in ferocious competition with each other. Because the vendors mix and match their own electronics with tubes and assemblies from different vendors, you can't say, unfortunately, that "*X* is a good brand." For example, the $1999 Mirror ProView 21 did well in perceptual and objective ratings, but the $1999 Mirror ProView 20T got little respect. Nanao's lower-cost FlexScan F760i•W was more highly regarded than the costlier F780i•W.

One consistent brand-quality pattern, however, shows up in picture-tube sources. The high-ranking Ikegami Electronics USA monitor uses Trinitron tubes manufactured by Ikegami under Sony license, while the consistently lower-ranking ViewSonic units are both based on Matsushita tubes.

In the middle of the pack are nine monitors in the street-price range of $1850 to $2450: the Apple Multiple Scan 20 Display, the three Focus LapisDisplays (20i, 20t, 21i), the Ikegami C/N 20A, the Mirror ProView 20T and 21, the NEC MultiSync 6FGp, and the ViewSonic 20.

In our technical-support evaluations, Apple didn't return most calls, a pattern that *Macworld* has seen now for several months across product categories. Despite its habitual flaws in after-sale support, Apple has the monitor of choice in the pack of nine for two simple reasons. First, the picture quality is near the top for this pack, and second, there isn't any kludging around with adapters and DIP switches and non-Mac software. And while the price is not bargain-basement, it is reasonable.

Getting the Color Right

Good color is important to graphic artists: they depend on high color fidelity when doing their work. The fundamental problems with choosing a color display may be described as the Circuit City syndrome. If you go into a store with a wall of color TVs, you can step back and see that many of them are out of calibration, featuring the same newscaster with a relatively green face in some cases and a bright orange face in others. But if you look at just one individual TV for a while, the perverse miracle of color-vision compensation takes over, and your brain makes the face look relatively normal.

As your monitor gets out of calibration (or if it never was calibrated), the same phenomenon occurs. That's no problem if the only colors you use are those on your desktop pattern and icons, but if you are working with color on screen for printing later, that mismatch can hurt the output quality. Thus, to get professional results throughout the

MW LAB

Two-Page Monitor Quality Compared

Best result for each test.
Products are listed in alphabetical order.

Brightness

Most people prefer a brighter monitor. We turned up the screen's brightness as high as it could go without showing scan lines. A monitor that puts out less than 20 footlamberts is considered dim.

Longer bars are better.

Contrast

The greater the contrast ratio, the more details show up in both light and dark areas of an image. We calculated the ratio between the luminance of white and solid color squares throughout the screen. A ratio of 6.0 or more to 1 is good.

Longer bars are better.

Convergence

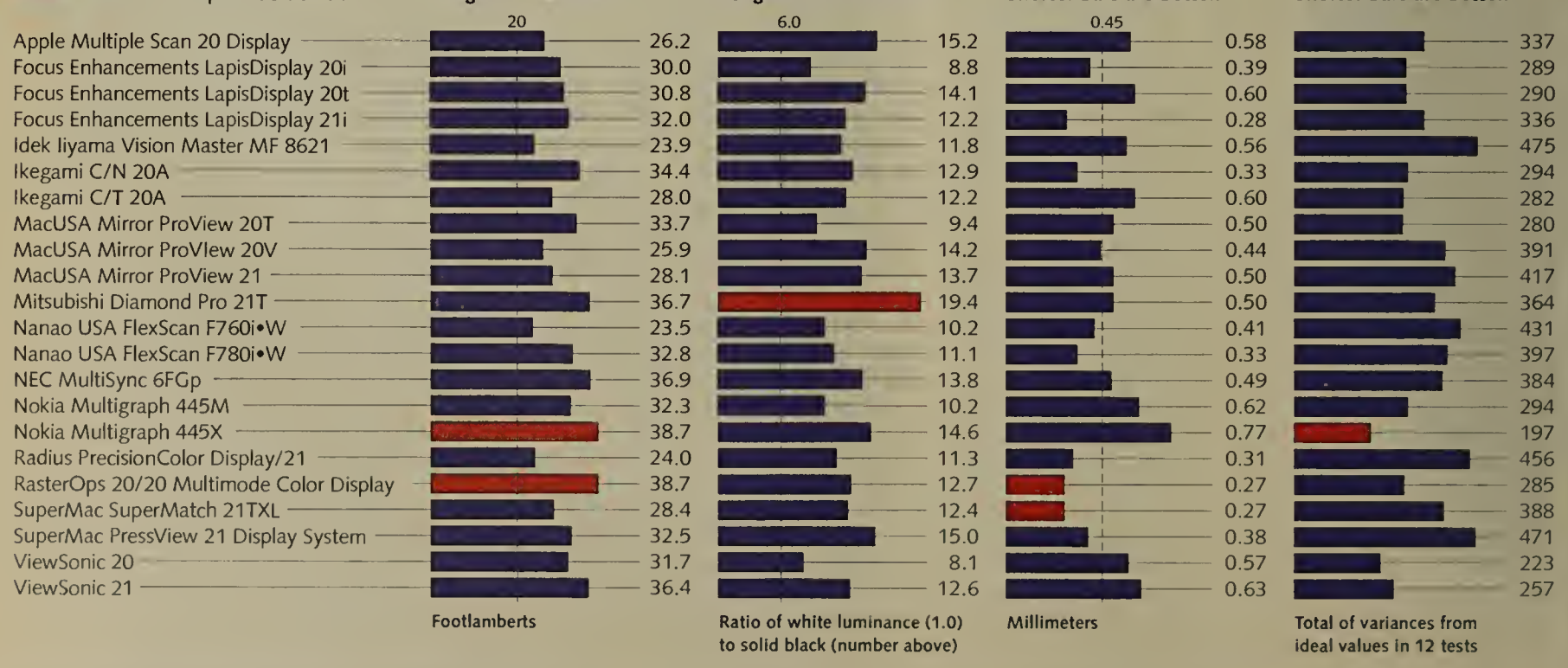
Convergence denotes how closely a monitor's red, green, and blue electron beams hit the same pixel on screen. The better the convergence, the sharper the image and the truer the colors. A measurement of 0.45 or less is good.

Shorter bars are better.

Gray Linearity

Gray linearity shows how accurately a monitor displays shades of hues across the spectrum from 100 percent to 0 percent. A perfect linearity measurement is 0. The worst possible linearity is 2700.

Shorter bars are better.



design/print cycle, color monitors must be calibrated by something other than an individual user's judgment.

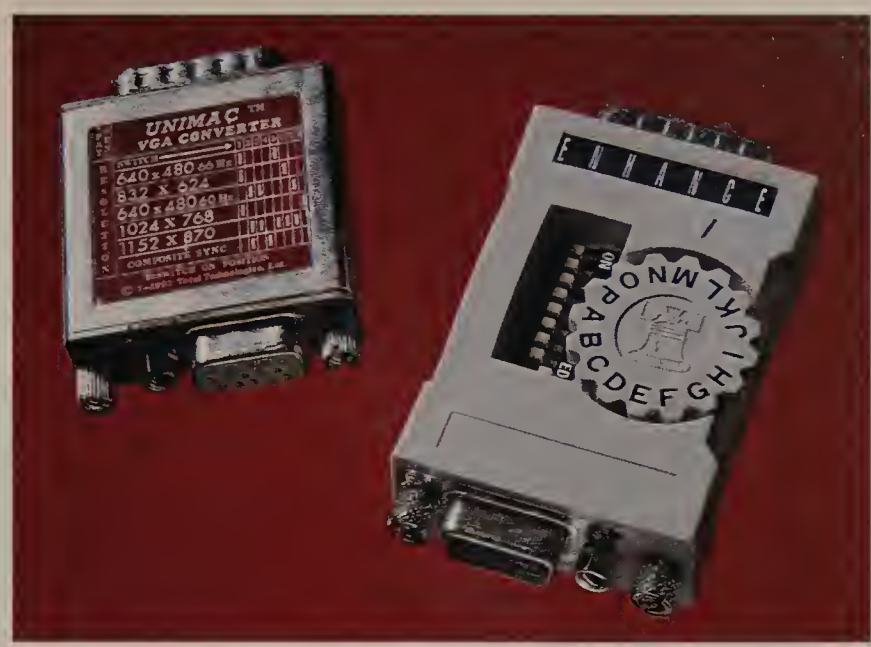
The simplest scheme, used by Nanao, is a program called Colorific, developed by Sonnetech. With Colorific software, you set a gray-scale midpoint by matching a zone of gray to a zone of 50 percent black-and-white tiny checks; you set the white point using a calibration card specially developed for white-matching under standard office fluorescent lights. At press time, the Colorific software was still in development, but Nanao expected to have it bundled with its two-page monitors shipping in mid-September. Sonnetech plans to license Colorific to other monitor makers as well.

Colorific's simple scheme gives a calibration accurate to one part in several thousand, nearly the range of Pantone printed-color possibilities.

Two other companies offer calibration through hardware-software combinations. Radius's $599 PrecisionColor Calibrator and SuperMac's $399 SuperMatch Display Calibrator both use an optical sensor to provide feedback to calibration software. This method lets the software correct the display through all the points of the gamma curves for the individual colors, and establish color-temperature settings. SuperMac also offers a $799 Pro version of its calibrator that uses an even more exacting calibration method and supports several color-matching systems, including Kodak and EfiColor. (The standard calibrator supports just the EfiColor matching system.)

The PressView's bundled color-matching software, for example, runs through the calibration procedure mostly unattended. This procedure doesn't necessarily guarantee that your color proofs from the printer will be perfect the first time out, but it does guarantee consistency.

SuperMac's PressView monitor comes with the SuperMatch Display Calibrator Pro hardware and customized color-control software (see the screen image "Calibration Controls"). That software offers a high degree of control over everything from color temperature to electron-beam adjustments, but its interface is not particularly intuitive, due primarily to the poor design of its icons. However, the controls themselves are very interactive and offer strong feedback. In some cases, such as pincushion correction and picture size, it's easier to use the hardware controls. But when the PressView software is active, the hardware controls are disabled.



Advanced Degree Required These two cable adapters (Enhance Cable Technology's Liberty Cable Adapter, right, and Total Technologies' Unimac), one of which is bundled with many monitors, can be set to support almost any monitor and video resolution. But the setup process is anything but simple, Mac-style plug and play.

Plug and Pray

Because most monitors are designed with the PC user in mind, they don't work as expected on a Mac. That's partly because working with Macintosh internal video requires a cable or adapter that uses a wiring pattern called a *sense key*. Without this key, the Mac assumes no monitor is present and doesn't generate a video signal.

This comes as a surprise to PC-oriented monitor makers, who expect a video card to generate a video signal whether or not a monitor is attached.

The adapters that PC-oriented vendors include with their monitors primarily tell the Mac that a monitor is present, and they tell the Mac what pixel resolution to display. However, to achieve this compatibility—and at the same time work with all computers and displays—several adapters we received are covered with many confusing dials and switches. Worse yet, most adapters came configured incorrectly.

For example, two cable adapters bundled with several monitors can be easily configured to display an 1152-by-870-pixel resolution—once you know how (see the photo "Advanced Degree Required"). To use the Liberty Cable Adapter from Enhance Cable Technology ($39.95, 408/293-2425), set the dial to P. To use the Unimac adapter from Total Technologies (about $15 from several distributors), set DIP switches 5, 6, and 7 to the on position (the switches are under a metal covering).

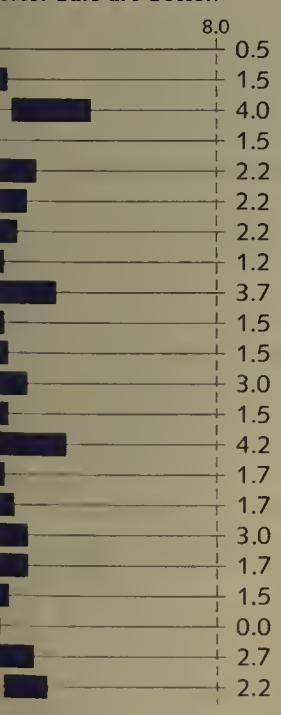
But getting the right resolution is only half the work. The switches also control the synchronization signals that the monitor needs to line up the pixels in their proper places on the screen. Incorrect sync leads to two common setup problems: sync doubling, where the entire screen appears to be covered with a light green ghost, and lack of sync, where the screen appears black.

Fixing a sync problem is usually simple—but, again, only if you know how. With the Liberty adapter, just change DIP switches 7, 8, and 9 from on to off,

stortion

s show the difference be-
een a screen's minimum
t side) and maximum (right
e) distortion. A maximum
tortion of less than 8.0 is
od. The longer the bar, and
farther it is from 0.0, the
re noticeable distortion is.

orter bars are better.



BEHIND OUR TESTS

Macworld Lab tested two-page monitors by measuring several aspects of visual quality. We measured brightness and contrast—which are key determinants of overall subjective quality (whether a monitor looks good)—with a Minolta luminance meter on a standard black-and-white target screen. We determined linearity—which determines the subjective color range and fidelity—by measuring the contributions of the red, green, and blue electron guns as we decreased the brightness of an all-white desktop in 10-percent increments.We measured distortion—which determines how accurately shapes are displayed—by displaying a black-and-white target that put 1-inch squares in the corners, along the edges of the display, and in the center and then using an antiparallax ruler to compare the size of the outer squares to the size of the center square. Finally, we measured convergence—another key determinant of accurate shape display—by using a Klein convergence meter, again at the center and in each corner.—**Macworld Lab testing supervised by Tim Warner**

DISPLAYS FOR ROCKET SCIENTISTS

Engineers and scientists need to look at large CAD drawings, circuit layouts, and DNA restriction maps—all applications where color is used to code information. That means that most applications use a limited palette, and a diagram is much more likely to have 16 colors than 16.7 million. Only a few scientific applications—in medical and bioanalytical imaging—involve display of color or gray-scale subtleties. Color accuracy, for example, isn't critical if your output device is an eight-pen color plotter.

Text sharpness, however, is very important in big diagrams full of fussy little 6-point tables and labels. If you're buying a monitor for technical applications, there are two columns in the table, "Two-Page Monitors Compared," to pay more attention to: tube types and comments.

As a broad generalization, Trinitron monitors look good when displaying diagrams because the Trinitron mask gives you very sharp vertical lines. Because sharp vertical lines contribute to text clarity, these monitors are also good at the fussy little labels. My first choice for technical use is Apple's own Multiple Scan 20, with the Ikegami C/T 20A a close (but more expensive) second.—**Charles Seiter**

or vice versa. With the Unimac adapter, toggle switches 2 and 3. Occasionally, you must toggle a switch on the monitor, or attach or remove a sync cable (this is generally just for BNC connectors, which are the ones with three separate connectors into the monitor).

To eliminate the confusion of setting an adapter, several vendors—Radius, SuperMac, Ikegami, Mitsubishi, and Mirror—ship either Mac-specific cables or Mac-specific adapters fixed to a particular resolution and sync. RasterOps, however, does not provide such a simple solution. But it is making up for the oversight by developing a special cable it plans to include with future monitors.

The new RasterOps cable has a sense key that tells the Mac that a multisyncing monitor—one capable of displaying many different resolutions, which most of these monitors do—is present, taking advantage of new software from Apple that allows resolution switching on the fly. A new version of the Monitors control panel works with another extension called Display Enabler to let you change resolutions without restarting. These ship with System 7.5 and require built-in video. (The Power Macs and Power Mac upgrade cards, which use System 7.1.2, also include the software.)

But you don't need the RasterOps cable to take advantage of this new capability. For example, you can use the Liberty adapter with Apple's software, too. Set the dial to J; set pins 7, 8, and 9 to the appropriate position for your monitor's sync; set pin 3 to on; and you're on your way.

Of course a couple of similar solutions have been around awhile. With NEC monitors, you can use the bundled DPI-On-The-Fly software (it works with the Quadra 700 and 900 and the Centris and Quadra 610 and 650 models). Also, a shareware program called Monitor Switch performs resolution switching in Centrises (with more than 1MB of VRAM) and Quadras (with more than 2MB of VRAM).

If this effort doesn't appeal to you, look to a traditional Mac monitor maker instead of the PC-oriented ones. But keep in mind that a traditional Mac vendor may also offer monitors that succumb to configuration mania, since Radius, SuperMac, RasterOps, and even Apple are now trying to sell to PC users, too.

The Last Word

The 22 two-page monitors Macworld Lab examined may be similar, but they're not identical. Besides the obvious modest differences in price, there are big differences in Mac-friendliness and color-adjustment capabilities.

If your career depends on good color work, you should get a SuperMac PressView 21 with SuperMac's calibration system. Don't let the high list price scare you—the street price is only a few hundred more than its closest rivals'. With a bit of patience, the PressView can be coaxed into the best results you can buy. (SuperMac recently started shipping the PressView 21•T, which uses a Trinitron tube and supports 1600-by-1200-pixel resolution but is otherwise the same as the regular PressView 21. The 21•T costs the same as the regular model.)

Otherwise, there's a whole slew of perfectly good monitors to choose from. We'd start with the Apple Multiple Scan 20, Ikegami C/N 20A, Nanao FlexScan F760i•W, and RasterOps 20/20. Of these, the best bet is the Apple Multiple Scan 20 Display, since it comes at a fair price, has excellent image quality, and doesn't put you through any of the connection and setup rigmarole that the PC-oriented monitors do. But we can't award it an Editors' Choice because of Apple's dismal technical support.

Several other companies sell two-page monitors worth looking at, but they were changing their product lineups during our testing, so we could not evaluate them. These include Sony Computer Peripheral Products (408/432-1600), whose monitors have rated well in past evaluations; Sigma Designs (510/770-0100); Philips Consumer Electronics (615/475-0317); MAG InnoVision (714/751-2008); Tatung Company of America (310/637-2105); and CTX International (909/595-6146), a newcomer to the Mac market.

If you're ready to buy a two-page monitor now, you can do so without fear that the price will drop by half or that 21-inch LCD panels will soon make your purchase obsolete—radical change is not imminent. Sure, a few sellers will have dropped out of the chase, a few will enter the fray, and prices will gently decline a bit. There are a few price/performance standouts, there are no outright horrors, and the field is ready for some aggressive comparison shopping at your local Mac dealer. m

CHARLES SEITER, a *Macworld* contributing editor, has designed colorimeters, densitometers, calibrators, and other color-process equipment. TIM WARNER is an associate lab editor at *Macworld* who specializes in display technology.

TWO-PAGE COLOR MONITORS

MW EDITORS' CHOICE

To pick the best two-page color monitor, we looked at display quality, ease of setup, price, and technical support. Because graphics professionals are the major users of such monitors, we gave the most attention to quality and setup issues.

For Color Professionals

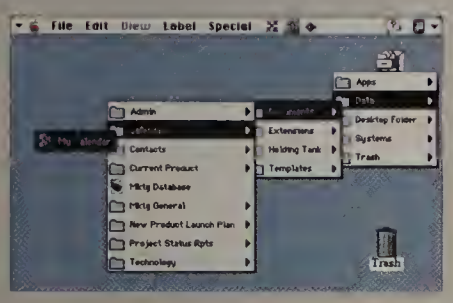
PressView 21 Display System Best image quality, most exacting color-calibration, and a decent street price (about $2400) make this the top pick for retouching and other color-critical work. **Company:** SuperMac Technology. **List price:** $3999.

For All-Around Graphics

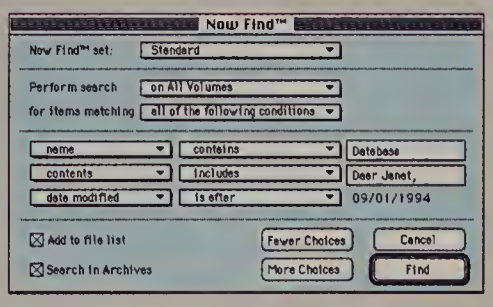
No choice There are many good monitors available, and it is impossible to single out any above the rest.

NEW!
Version 5.0

Think of it as the missing piece of the apple.



Organizing files is easier than ever–just click on a folder and hierarchical menus appear so you can just drag and drop.



The powerful Find lets you quickly locate the file you're looking for, based on up to 10 criteria–and even searches inside archives.

Anything can be improved upon. Even that paragon of smart design and intuitive use, the Macintosh® computer. So, to make your Mac quicker, simpler and more efficient, upgrade it to Now Utilities 5.0.™

The new version sports a time-saving interface that makes features more accessible. You can create custom menus, jump directly to applications, or locate any misplaced files lickety-split.

Hate to waste time? Tasks that once took twenty keystrokes now take only one. With just one click you can move, copy, delete or alias items.

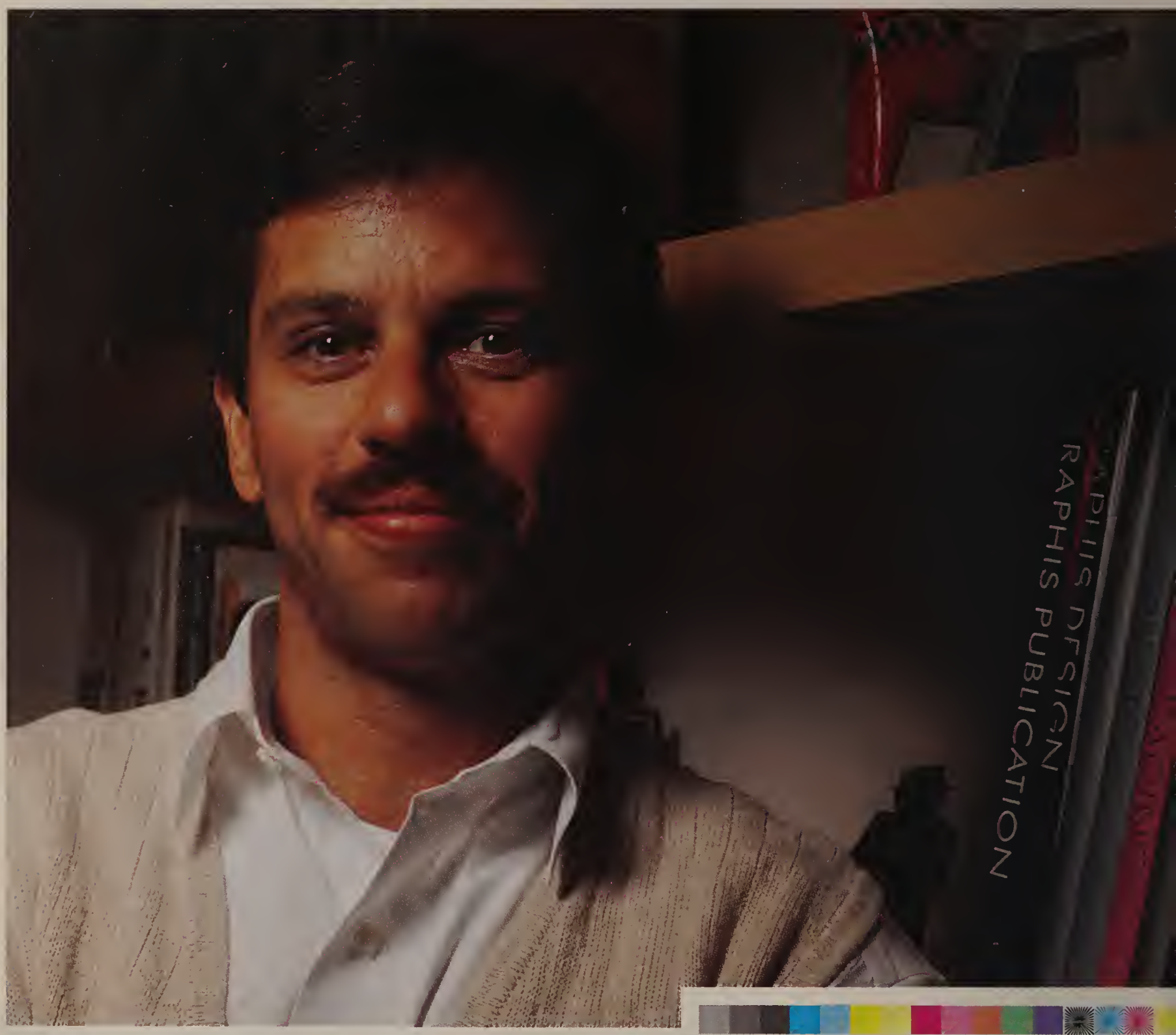
Precious disk space is saved with full archiving and transparent compression options. Software scuffles are all but eliminated with new conflict isolation. And auto-Save backs up every keystroke, so you're always safe.

The original version won countless awards and praise from the experts. Not ones to rest on our laurels, we've spent the last year rethinking, refining and adding major features as well as subtle enhancements. New Now Utilities 5.0. Accelerated for Power Macintosh.™ Introductory street price under $70, after that $89. Upgrades available for just **$39.95 until November 15, 1994.** Call **1-800-689-9423** today, or see your dealer.

Now Software

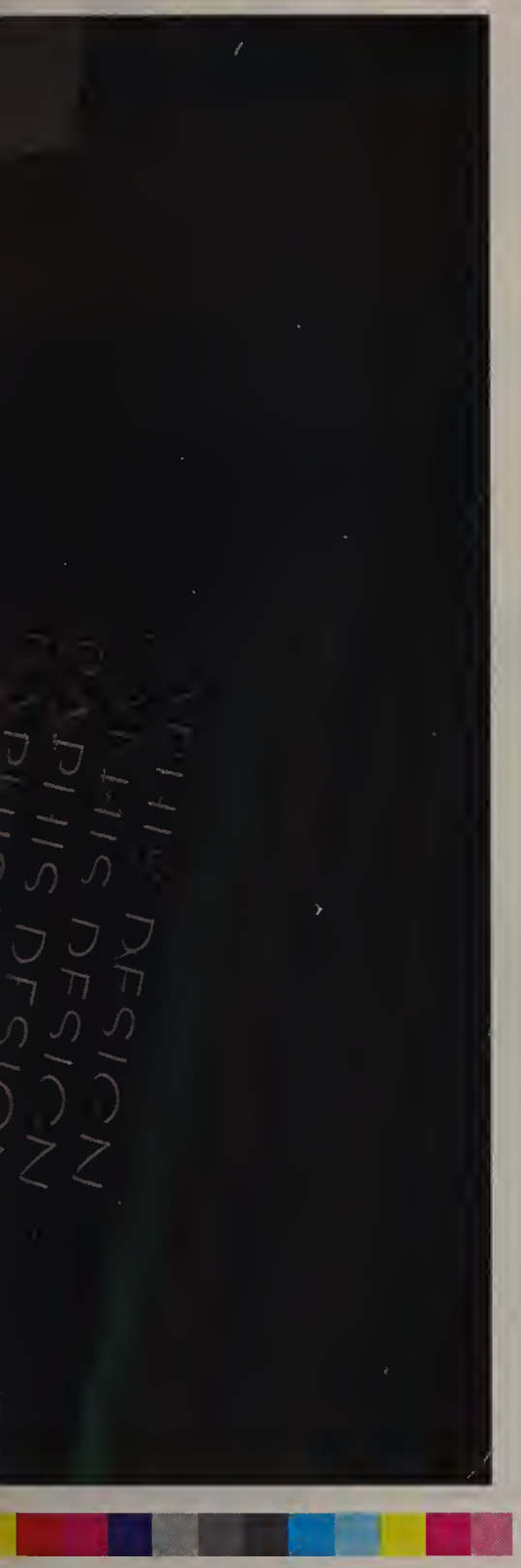
© 1994 Now Software, Inc., 921 S.W. Washington, Suite 500, Portland, OR 97205-2823. Phone: 503-274-2800. Fax: 503-274-0670.
Also available in multi-packs. Now Utilities is a trademark of Now Software, Inc. Macintosh is a registered trademark, and Mac and Power Macintosh are trademarks of Apple Computer Inc.

"Blah, Blah, Blah."



Steve Tolleson, Owner, Tolleson Design.
San Francisco, California.

The name Scitex, and the Scitex logo are trademarks of the Scitex Corporation Ltd., and may be registered in certain jurisdictions.



We've all heard it a thousand times before. The "commitment to quality" mantra. But all clichés aside, to be the best there's only one way to do things – and that's the right way. How do I maintain excellence and still balance the bottom line? I skip the hype. I stick with Scitex.

OPEN TO A WORLD OF COLOR scitex

For more information call Scitex America Corp. Eight Oak Park Drive, Bedford, Massachusetts 01730. Telephone: 1-800-685-9462 Fax: (617) 275-3430

Circle 233 on reader service card

EDITED BY JAMES A. MARTIN

Graphics

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

Scanners Break the 24-Bit Barrier

AGFA AND EPSON AMERICA HAVE both announced desktop color flatbed scanners that capture images at 30 or 36 bits but cost about the same as some 24-bit models.

Unlike 24-bit scanners, which record 8 bits of color information per red, green, and blue channel, the new high-bit scanners from Agfa and Epson record 10 or 12 bits of color information per RGB channel (depending on the scanner) for a total of 30 or 36 bits.

The scanners automatically *downsample* the images, a process that results in 24-bit files with less noise and better gradations and contrast than images captured on 24-bit devices, the vendors say.

In recent months, other scanner manufacturers such as Microtek and Umax Technologies have announced competitively priced flatbed models that capture images above 24-bits. For more information, see *Graphics* news, June 1994. The Agfa Arcus II (suggested retail price $3500), which replaces the 30-bit Arcus Plus model, is a one-pass, 36-bit scanner with an optical resolution of 600 dpi; maximum interpolated resolution is 2400 dpi for color, 3600 dpi for line art. The scanning area is 8.3 inches by 14 inches for reflective originals and 8 inches by 10 inches for transparencies (via an integrated transparency module). Bundled software includes Adobe Photoshop 2.5.1 (3.0 will be bundled when available) and Agfa's FotoTune Light for color management.

Agfa's new StudioScan II (estimated street price $995) is a one-pass, 30-bit flatbed scanner with an optical resolution of 400 dpi, interpolated up to 2400 dpi for color and line art. The scanning area is 8.5 inches by 14 inches for reflective artwork; there's an optional transparency module for slides (street price $400). Bundled software includes Adobe Photoshop LE, FotoTune Light, and Caere OmniPage Direct for OCR. Both Agfa scanners should ship in August.

SEAN SULLIVAN

The 30-bit ES-1200C-Pro Mac scanner from Epson has an optical resolution of 600 dpi, which can be interpolated up to 4800 dpi (for color and line art). This scanner, unlike most, lets you switch between one- and three-pass scanning, so you can choose the best method for a particular image. The scanning area is 8.5 inches by 11.7 inches. The scanner comes with Photoshop 2.5 (3.0 when available), Kai's Power Tools 2.0, and other software. Due to ship in August, the ES-1200C-Pro Mac lists for $1499; the ES-1200C (the same scanner but without Photoshop and Kai's Power Tools) sells for $1049. Agfa, 508/658-5600; Epson America, 310/782-0770.—J.A.M.

A Service Bureau on Your Desktop

LASERMASTER IS PUSHING THE CONcept of desktop prepress a step further with the introduction of the PressMate, a chemical-free film printer that, when combined with LaserMaster's Unity 1800PM-R high-resolution printer, creates what the company says will be an industry first: a "desktop service bureau."

The PressMate ($19,995) uses a proprietary heating method to produce camera-ready color film negatives, positives, and proofs (maximum size: 12 inches by 24 inches) in a desktop device. Although

the PressMate is based on a 600-dpi print engine, LaserMaster's ThermalRes technology boosts the PressMate's resolution up to 2400 dpi for text and line art and is capable of producing screen tints up to 133 lines per inch, according to the company. The PressMate uses LaserMaster's ColorMark color-management system, which supports the Trumatch swatching system and Specifications for Web Offset Publications color standards.

The PressMate has no PostScript interpreter of its own; instead, it must be linked to LaserMaster's Unity 1800PM-R plain-paper typesetter ($9995), which features an enhanced PostScript Level 2 interpreter from Pipeline Associates. The Unity is based on a Toshiba 600-dpi print engine, which LaserMaster's TurboRes technology bumps up to look like 1800 dpi. The two devices are connected via LaserMaster's VideoNet port, a video-signal technology that the company says offers real-time file-transfer speeds.

LaserMaster says that in addition to using a traditional halftoning method, the PressMate will incorporate stochastic screening—a more precise technology designed to eliminate moirés. Output speed will be about 10 minutes for each 12-by-18-inch color panel of a four-color separation. And while some service bureaus charge $80 to $150 for four-color separations, PressMate material costs will be about $30 for the same job, the company says.

Although the PressMate-Unity combination could produce an entire four-color magazine with little if any compromise in quality, according to a LaserMaster spokesperson the system will most likely be used for ads, direct-mail pieces, brochures, and annual reports.

The Unity 1800PM-R, which is scheduled to ship in early September, supports output up to 12 inches by 19½ inches. The printer includes 48MB of RAM and 40K of fast-cache memory. LocalTalk, parallel, serial, and Ethernet support is included. The PressMate is expected to ship in October. LaserMaster, 612/944-9330.—J.A.M.

Edit Your Images in QuarkXPress

NOW YOU CAN MAKE THOSE INEVITAble last-minute alterations to images after they've been placed in QuarkXPress—without going back to your image-editing program. ImageEditor, ImageEfxts, and ImageBalance from PictureWorks Technology provide a range

ImageEditor lets you manipulate graphics from within QuarkXPress.

of editing options—including paste and color controls—previously available only in full-blown programs like Photoshop.

With ImageEditor, you can change existing images or add new ones with tools such as the airbrush, paintbrush, smudge brush, and pencil; brush options include Sizes/Shapes, Fade, Pressure, and Hue Only. You can make rectangular, elliptical, or magic-wand selections or use the lasso selection tool; selections can be feathered or masked. The Paste Controls dialog box lets you control such effects as opacity and the colors in both the underlying and floating selections. In addition to supporting RGB, CMYK, Grayscale, Palette Color, and Black/White modes, ImageEditor lets you view an image's color values in RGB or CMYK. You can also load and save custom colors through QuarkXPress's Color Picker.

ImageEfxts provides a variety of filters, including Sharpen, Noise, Outline, Emboss, Darken, and Lighten. It also accepts Photoshop plug-ins.

With ImageBalance, you can fine-tune an image's color and tone by individually altering highlights, shadows, and midtones; changing brightness and contrast; or generating a histogram.

All three XTensions require 4MB of RAM, System 7, and QuarkXPress 3.1 or later. ImageEditor ($249) is expected to ship in late August; ImageEfxts ($129) and ImageBalance ($99) are due in September. They're distributed through XChange, 303/229-0620. PictureWorks Technology, 510/ 735-2910.—CATHY ABES

The Stock Market Soars

NEED QUICK, EASY ACCESS TO STOCK photos and background textures? If so, there's a variety of new CD-ROM image collections and browser catalogs that offer anywhere from 100 to over 1000 images. Here are some of the latest releases.

• Letraset's Phototone Unlocking Library is a 19-volume CD-ROM set of photographic backgrounds in more than 40 categories. The $199 purchase price

gives you immediate access to the set's 1132 low-resolution (50-dpi) images for browsing and comp purposes only. The set also contains 1132 high-resolution (up to 9.6-by-12-inch, 175-lpi) versions of the same images, which you can download from the CDs for $249 each (usage rights are unlimited). You order an image by filling out a form (included with the CDs) and faxing it to Letraset or an authorized dealer. You then receive a fax containing the electronic code that unlocks the image. Payment options include cash or credit card. Letraset, 201/845-6100.

• Westlight, a stock-photo agency, has announced its Questock Image Search System ($39.95), a CD containing 4500 photographs in Eastman Kodak's low-resolution Catalog format. The photos are for browsing and comps only; any other usage requires licensing from Westlight (the agency offers Photo CD scans and film transparencies of the images). The disc also contains Questock, Westlight's extensive image-searching software, and Kodak Browser, an image-cataloging program. Westlight, 310/820-7077.

• Photo 24, a stock-photo agency, is now shipping its textures on CD. Each disc costs $79.95 and includes 100 backgrounds (in Kodak's Photo CD format), each reflecting a particular theme: Flowers and Leaves, Skies, Walls, and Water are the first four discs. Future themes include Fabric, Food, and National Parks. Photo 24, 818/999-4184.—J.A.M.

When all else fails,

Starting at
$119

There are three types of computer users: those who have lost data due to a power problem, those who are going to, and those who have protected themselves against the inevitable surge, blackout or brownout with the most reliable UPS they can buy: Back-UPS by APC. In fact, editors and users alike agree that if your system demands absolute reliability, you can depend on APC Back-UPS.

According to a study by Bell Labs, undervoltages represent the overwhelming majority of power problems likely to hit your computer. The question is not if a failure will occur, but when. Whether due to construction, wiring, weather, other office equipment, or accidents, power problems are as inevitable as death and taxes. That's why you need instantaneous battery backup power from the Back-UPS to prevent data loss, hard disk crashes, and hardware damage.

If you're concerned about lightning, rest assured that when measured using the ANSI/IEEE 587 Category A test wave, Back-UPS are superior to virtually all separate surge suppressors. Surge performance is even backed by a $25,000 Lifetime Equipment Protection Guarantee.

APC Voted most reliable by 3-to-1
Tripp
Best

PC MAGAZINE

In a recent poll by PC Magazine's MagNet, APC was voted the most reliable UPS manufacturer by a 3-to-1 margin. That's dependability that will see you though years of unmatched power protection.

PC MAGAZINE UK EDITORS' CHOICE

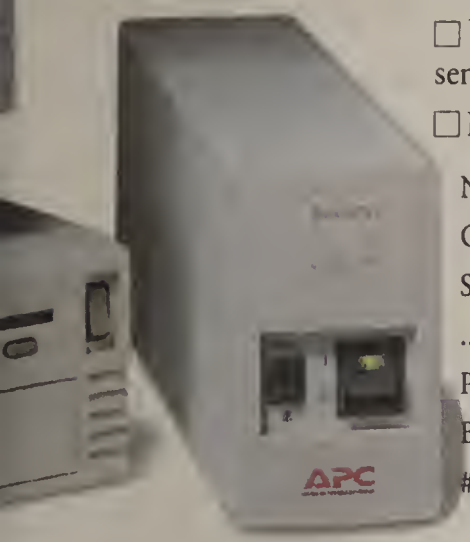
"The clear winner in price performance...it's unbeatable..."

August 1993
APC Back UPS 1250

© 1994, APC. Back-UPS, PowerChute are trademarks of APC. Other trademarks are the property of their owners. Specs subject to change without notice.

Free Power Solutions Handbook

What are the myths and musts of Mac protection? What are the 10 most common power protection mistakes? The top tips for adding reliability to your LAN? Get your FREE copy and find out!



☐ YES! I'm interested in trading up a competitive or older UPS to a Back-UPS. Please send Trade-UPS info.

☐ YES! I'm interested in APC's Reseller Partner Program. Please send more info and an application.

☐ No! But I would like a FREE Power Protection Sales Handbook.

Name ..... Title .....

Company .....

Street/City/State .....

.....

Phone/Fax .....

Brands of UPS sold? .....

# of UPSs sold per month? .....

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone _____

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

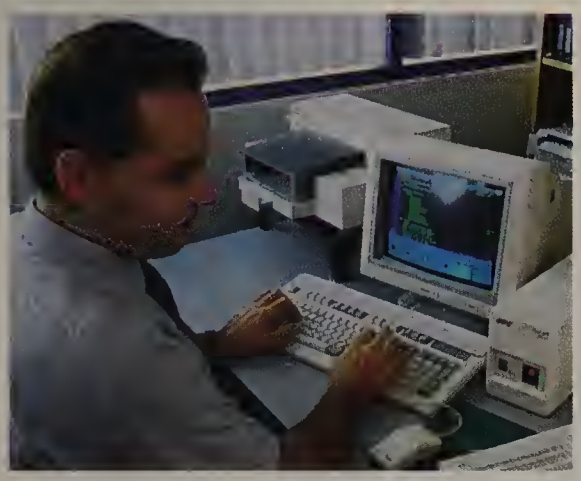
APC

AMERICAN POWER CONVERSION

132 Fairgrounds Road
P.O. Box 278
West Kingston, RI 02892-9920

Back-UPS® prevail

Attention Resellers, Win $10,000 cash in APC's Back-UPS Workstation Success Story Promo!! Call for an entry form today!



"All other brands of UPS die regularly in this lightning prone environment. My APC won't die!" said Paul Sisilli, Systems Analyst, City of Port St. Lucie. "With other brands, users don't find out until it is too late. The power interruptions here are very hard to live with. The other brands are dying off. Typically they last just beyond their warranty period. My Back-UPS is going on three years...no other brand is as reliable."

Don Truax knows first hand about Back-UPS reliability: "It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked. Each morning I get a surge down the line and both APC's hate it - they simultaneously 'holler 'n clamp' while my 'Brand T' quietly sleeps in. I've relegated that unit to non-critical household stuff like my VCR."

Andrew Wargo, Manager at Baxter Land Company, tried two other brands before Back-UPS. "One lasted a few days, a second one went up in smoke after 48 hours, a third lasted less than 24 hours! I then bought my Back-UPS for less than half of what I had paid for the others. We've purchased three more Back-UPS and for the past 14 months they've been just hummin' away on the same power line that was eating the other brands alive!"

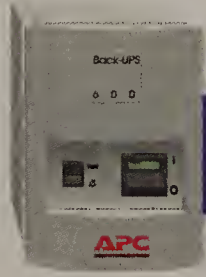
If you're protecting a network server, a communications interface port (on models Back-UPS 400 and higher) provides the security of an automatic shutdown to all major OS including NetWare, Windows, Windows NT, LAN Server, LAN Manager, LANtastic, SCO Unix, OS/2, Banyan Vines, AppleShare/System7 and more, so your data is safe whether the system is attended or not. (PowerChute software and interface kits sold separately.)

And since data processed on networked clients needs protection too, the $139 Back-UPS 280 provides an economical solution for all your LAN workstations. And if you have a new green PC, the price is even better at $119 for the new Back-UPS 200.

MADE IN

Discovering how essential Back-UPS protection is can be hard...if you wait for the next storm to roll through. But discovering how affordable it has become is easy...

Back-UPS (L to R)	Application	Sugg. List
200	Green PCs, small desktop systems	$119
280	Desktop systems, LAN nodes, POS	$139
400	Desktop 486, 386 systems, servers	$229
450	Tower 486, 386 systems, servers	$279
600	Heavily configured systems, CAD/CAM workstations	$399
900	Multiple systems, longer runtime applications	$599
1250	Multiple systems, LAN hubs, small minis, telecom equipment	$799



More than... 2,000,000 Satisfied Users

APC has won more awards for performance and reliability than all other UPS vendors combined...including five consecutive LAN Times *Readers Choice awards...*

PC World Top 20 Upgrade · Windows Mag. Readers Choice · LAN TIMES Readers Choice 1994 · Computer Reseller News Editors' Choice

Call today and find out (the easy way) why more than 2,000,000 satisfied users bank on Back-UPS from APC. With more awards than all other brands combined, field-proven reliability, and a two year warranty, Back-UPS are power protection you can purchase with confidence.

Microsoft Windows Compatible · yes NetWare Tested and Approved · Artisoft Compatible LANtastic · SCO OK · Available and Ready for LAN Server · Microsoft LAN Manager Version 2.1 Compatible · Solaris Compatible

AWARD-WINNING FEATURES

Instantaneous backup power beats blackouts and brownouts

Unmatched lightning (tested to UL1449) and surge protection for maximum hardware safety

Network-grade line conditioning and EMI/RFI filters prevent glitches

LAN Interface (on Back-UPS 400 and up) provides automatic shutdown to all major OS: Windows, NT, NetWare, LAN Server, LAN Manager, LANtastic, Unix, OS/2, Vines, AppleShare/System7 and more.

Site diagnostics automatically spot missing ground and reversed polarity, two common miswirings which usually require an electrician's visit to diagnose.

Option switches allow you to customize transfer voltage and alarm settings.

Test Switch for ongoing peace of mind.

2 year warranty and full safety approvals including ISO9001.

$25,000 Lifetime Equipment Protection

Hot Swappable, User Replaceable Batteries reduce service time, costs by allowing safe removal and replacement of exhausted batteries, while your system stays running.

APC™

AMERICAN POWER CONVERSION

800-800-4APC

APC EUROPE (+33) 64625900 / ASIA/PACIFIC FAX: (+813) 5295-1989
L. AMERICA FAX: 401-789-9771 / Compuserve: GO APCSUPPORT
Internet: tech@apctech.UUCP or uunet!apctech!techs

Circle 72 on reader service card

Dept. D7

Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: Greg Vander Houwen heads the Seattle-area computer graphics firm Interact, whose clients include Apple and Microsoft. His artwork is featured on the Adobe Photoshop 3.0 CD-ROM.

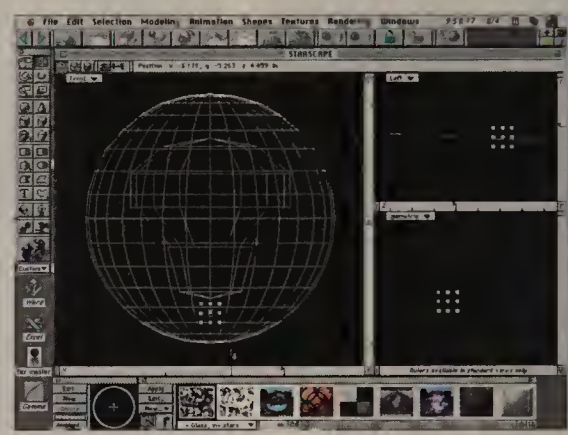
How It Was Done: This image, called *Starscape*, was generated from two simple geometric shapes—a plane and a sphere. The entire model required only one texture map and one light source.

Vander Houwen began in Strata StudioPro by creating a sphere with a light source inside it at the center of his 3-D model. In Photoshop, he created a texture map with scattered white stars, using a star-shaped brush with fairly high spacing and various opacity settings.

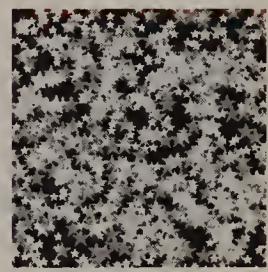
In Strata StudioPro, he combined the stars image with a refractive-glass texture he'd previously made in StudioPro to create a new texture. Below the sphere, he created a plane that tilted toward the viewer. For the final rendering, he placed the camera close to the plane and some distance from the sphere.

Back in Photoshop, he used a mask to lighten the foreground area without affecting the sphere. After saving a duplicate of the image into a new channel, he feathered the sphere, filled it with black, and deselected it to leave a soft black circle. Then he brightened the shadow areas with Curves. After loading that selection into the main image, he lightened it with Curves again. He further adjusted the foreground by saving another duplicate to a new channel and inverting the selection so he could enhance the areas that were originally very dark.

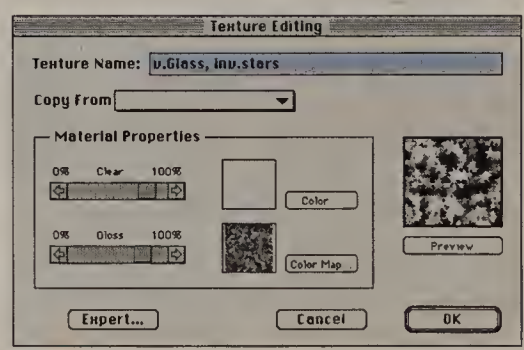
After making the glow mask, Vander Houwen loaded the selection into the main image channel. In Levels, he moved the gamma (center) slider about 20 or 30 points to the left to create the glow effect. He then selected the sphere with a slight feather, floated the selection, and applied the Fragment filter with an opacity of about 70 percent. In Hue/Saturation, he colorized the image by clicking on Colorize, reducing the saturation and moving the Hue slider to the desired blue. m



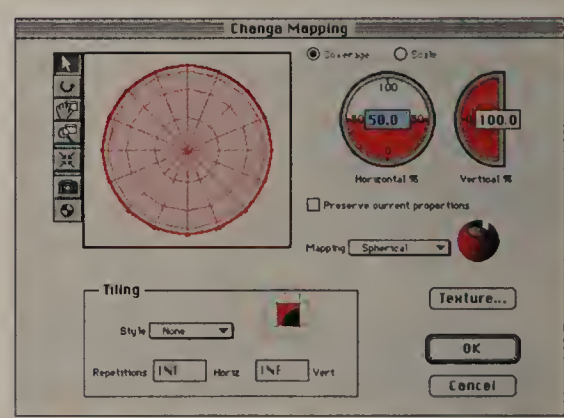
1 In StudioPro, Vander Houwen placed a sphere (onto which he would later map a texture of transparent stars) and a light source in the center of the 3-D environment.



2 To create the stars texture map in Photoshop, he selected a star-shaped brush. In Brush Options, he set the spacing fairly high to put some space between the stars. He also varied the brush opacity to achieve the stacked effect. (He repeated this process with a larger brush.)



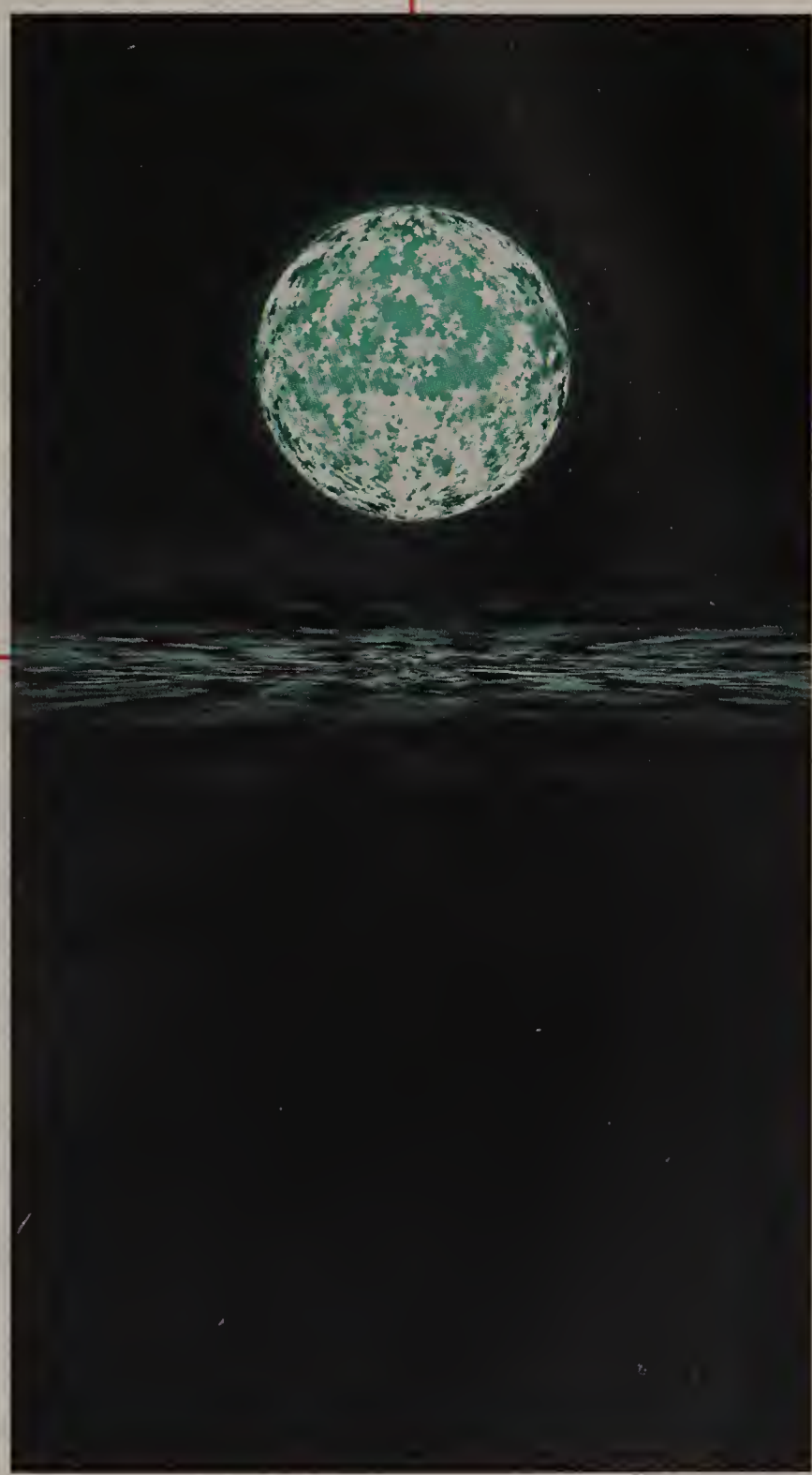
3 In StudioPro's Texture Editing dialog box, he clicked on Copy From to load a refractive glass texture he'd made earlier in StudioPro. He combined the glass texture—including transparency, reflectivity, and gloss—with the stars, which he loaded into the map by clicking on Color Map and selecting the stars image.



4 After applying the texture to the sphere, he opened StudioPro's Change Mapping dialog box, set Tiling to None, and made sure that the mapping was set to Spherical and that it completely covered the sphere.

5 By choosing the camera's view and doing a test rendering with ray tracing, Van-der Houwen saw that the light source was projecting the stars across the plane. For the final rendering, he increased the resolution.

6 To lighten the foreground, he used Photoshop's Duplicate command to put a copy of the image into a new channel as a mask. There, he made the sphere a feathered selection, filled it with black, and deselected it to replace it with a soft black curved shape. Then he used Curves to brighten the shadow areas to fully select them.



7 In Quickmask mode, he created a vertical blend—white (fully selected) at the top to black (unselected) at the bottom—which he loaded as a selection and filled with black. He loaded the result as a selection into the main image and then inverted its map to make the dark areas in the foreground light.

8 To create the glow mask in a new channel filled with black, he selected the area of the sphere with a feathered elliptical marquee and filled it with white.

THE TOOLS

Hardware: Power Mac 7100 with 40MB of RAM and an FWB Hammer 525MB internal hard drive; Apple 250MB external hard drive; Macintosh 16-inch Color Display with 24-bit color support; Wacom UD-0608-A 6-by-9-inch Pressure-Sensitive Tablet; Hewlett-Packard DeskWriter 560C.

Software: Strata StudioPro 1.1; Adobe Photoshop 2.5.1.

*Suggested retail price. Reseller prices may vary. You must own a competing word processor with a suggested retail price of $249 or more.
Offer good in the United States and Canada only. All trademarks are property of their holders. ©1994 WordPerfect Corporation. All rights reserved.

Click the button. It's so simple. Click. It's the easiest way to get things done. Which is why new WordPerfect® 3.0 for the Mac® puts all the things you want from your interface in your face. Giving you more buttons to click than any other word processor. So features are easy to find. And use. Want to change your text formatting? Click. Apply a style? Click. Create a table? Click. Then you can bring up a different bar with all the table functions you want. Borders, editing—even math functions—it's all right there. Click. Our customizable button bars put your favorite tools right there, too. Like spell checking. Grammar checking. Our integrated drawing program. Whatever you want. There's even buttons for common tasks like bulleted indents. So you'll seldom have to do anything. Besides click. (And type, duh. This is a word processor.) But you can do other cool stuff, too, like run QuickTime.™ Or WordPerfect native on the Power Macintosh.® So visit your local reseller or **call us at (800) 526-7820 for our $99* competitive upgrade.** If the number was nine buttons shorter, it'd be as easy as our interface. Click.

Our ruler bars give you a whole new way to look at formatting.

Word processing that gives you the power to express yourself.

Accelerated for Power Macintosh

WordPerfect®
macintosh®

Special Effects

By itself, Adobe Photoshop is indisputably the most versatile image-editing program for graphics professionals. But combined with third-party plug-in filters from the likes of Aldus, Xaos Tools, and HSC

Software, Photoshop becomes a high-powered special-effects laboratory as well.

Named for the filtered camera lenses that let you zoom, distort, and tint photographs as you shoot them, Photoshop filters extend well beyond anything available to traditional photographers. The third-party filters I evaluated allow you to transform a picture into a series of brushstrokes, wrap images around three-dimensional objects, and generate a never-ending supply of textures out of thin air—to name just a few capabilities.

I worked with nine plug-in special-effects filter packages, ranging in price from $89 to $199. Starting with the filters that are easiest to use and working my way up to the most challenging and capable, I've evaluated each filter package based on how it meets the needs of new and experienced users alike. I've also outlined the pros and cons of each package and even compiled a list of the best individual filters (see the sidebar, "The Top Five Plug-Ins").

While I used these filters with Photoshop, it's important to note that third-party Photoshop filters are usually compatible with any application that supports the Photoshop plug-in format, including Fractal Design's Painter, MicroFrontier's Color It, Pixel Resources' PixelPaint Pro3, Deneba Software's Canvas, Specular International's Collage, Adobe Premiere, Avid VideoShop, CoSA's After Effects, StrataVision 3D, and Ray Dream Designer. But it pays to be safe: if you intend to use a filter collection with a package other than Photoshop, double-check to be sure it's compatible.

Also, keep in mind that, while I tried to be as comprehensive as possible, this article doesn't cover all the third-party special-effects Photoshop filters out there. You'll probably discover some interesting freeware and shareware Photoshop filters if you hunt around. That's because the new version of Photoshop, 3.0 (which should be available by the time you read this), includes Filter Factory, a module that lets expert users create their own custom filters; you can expect to see some of these distributed via online services. For more information on Photoshop 3.0, see *Graphics* news, *Macworld*, September 1994.

ALDUS GALLERY EFFECTS, VOLUMES 1 THROUGH 3

Aldus Gallery Effects from Aldus Corporation (800/685-3570) comprises three separate collections: Volumes 1 ($199), 2 ($99), and 3 ($199). Despite the differences in price, each collection contains the same number of filters (16). The filters produce straightforward effects, such as making an image appear as if it were hand-painted. Each filter includes a preview window so you can apply your settings to a small area of a picture before investing time in filtering the entire selection. Volume 1 also includes a standalone utility for applying filters (helpful only if you don't own Photoshop).

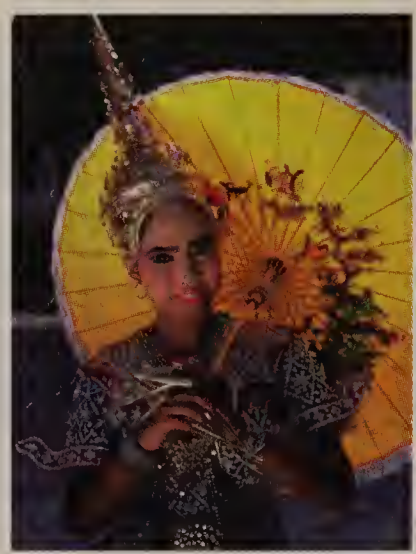
But if I had to describe Gallery Effects in a word, it would be *ho-hum*. The fact is, you can duplicate most of the filter effects using Photoshop's native capabilities. For example, to mimic the GE Emboss filter in Gallery Effects Volume 1—which creates a color embossed effect ostensibly missing from Photoshop—you can enter a sequence of numbers in Photoshop's Custom filter. And emulating the GE Photocopy filter from Volume 2 is as simple as applying the High Pass and Median filters (both supplied with Photoshop) along with some Levels adjustments. The effects are not absolutely identical, but they are extremely close—and in many cases, Photoshop's built-in options are preferable to Gal-

by Deke McClelland

in Photoshop

A buyers' guide to third-party image-editing filters

Among the Kai's Power Tools filters used for this image were the Julia Set options (part of the Fractal Explorer filter) for the eyes and background, and Special Blue Noise for the child's hair.



PAUL DEGREVE/FPG

TRAVELPIX/FPG

Filter Finance *Macworld* paid a stock-photo agency nearly $2000 for usage of the example images in this article. The cost could have been almost double that amount, however, had we not been able to negotiate; the agency initially planned to charge for each use of the woman's photograph that appears in the image "Creating Order within Xaos." The bottom line: Filters can be fun, but unless you're applying them to royalty-free images, they can quickly bust your art budget if you're not careful.

Getting Around Gallery Effects I created the two images at left using Aldus Gallery Effects' GE Emboss filter (top) and GE Photocopy filter (bottom). To get the images on the right, I relied on capabilities built into Photoshop. The left and right effects aren't identical, but the differences are subtle enough to cast doubt on the value of some of Gallery Effects' filters.

lery Effects (see "Getting Around Gallery Effects").

For instance, no matter how you apply Gallery Effects' GE Photocopy filter, you get a gray-scale image with only 16 gray values and little detail. But by using Photoshop's High Pass and Median filters, you retain much of the color and all of the detail of the original image.

Of course, not all Photoshop users are well versed enough to know they can emulate certain effects using built-in filters. To its credit, Gallery Effects names its filters fairly logically and makes them easy to use, providing novices with access to capabilities they didn't know they already had. If Aldus took the next step and made the filters more versatile, the collection might be of more use to intermediate and advanced users as well.

THE BLACK BOX 1.1

From independent vendor Alien Skin Software (919/832-4124)—easily the best name for a software company I've heard this year—The Black Box ($89) is a collection of six filters that add highlights and shadows in and around selection boundaries. For example, one filter creates a drop shadow behind a selection. More-interesting filters generate glass-refraction effects, distort images into whirlpool patterns, and add beveled edges to selection outlines (see "Pressed Text").

Rather than filtering the selected area of an image—the standard operating procedure for most filters—The Black Box plug-ins affect the perimeter of a selection and the area just outside of it. As a result, these filters end up deselecting the selected area, which means you can't composite the filtered image with the underlying original except by reverting to the image you saved to disk or stored in Photoshop's Snapshot buffer. Furthermore, in a version I reviewed (1.1d), using the Undo command didn't completely undo the effect. By using Photoshop's Difference command, I found that colors in and around the selected region remained one to four times darker than they were before the filter was applied. Although this problem was fixed in version 1.1e, I still think it's a good idea to save or take a snapshot of your image before applying a Black Box effect. You'll also want to store your selection as a mask so you can retrieve it for later use.

The Black Box filters are far from perfect. The interface is fairly complicated, and the dialog boxes lack previews. Also, as with Gallery Effects, you can emulate most of The Black Box's filters using Photoshop's native capabilities. But rather than limiting your options—as does Gallery Effects—Alien Skin's collection broadens your range of options and makes complicated tasks more straightforward. As a result, even experienced users will find these plug-ins useful, albeit in need of minor repair.

ANDROMEDA, SERIES 1 AND 2

Possibly the most diversified and unusual filter packages come from Andromeda Software (805/379-4109), the same company that programs Adobe Streamline. Andromeda's Series 1 collection, Photography Filters ($129), includes ten plug-ins that

enable you to create everything from automatic rainbows to complex, repeating vector patterns. But while many of the effects are interesting—you can create starburst highlights, rotate repeating images inside the spokes of a circular grid, and apply variations on Photoshop's Motion Blur and Lens Flare effects—it's unlikely that you'll count any of them among your most beloved filters. Except for the mezzo-screen option offered by the Designs filter, Series 1 is a bunch of wacky special effects in search of a practical application.

Series 2, Three D Filter (also $129), however, is as pragmatic as a set of socket wrenches. The single Three D Filter plug-in enables you to wrap a selection around one of four three-dimensional forms—a sphere, a box, a cylinder, or a 2-D plane floating in 3-D space (see "The Three D's of Imagery"). Using the program is a bear, though: the interface has more than its share of unconventional controls, and the tiny manual is riddled with 8-point type and punctuated by cryptic headlines—like "3.2.8.2. (Save) Demo Parameters"—that only a robot could understand. But with a little patience and a whole lot of experience, you'll be using this program like a champ.

The options, though complex, are comprehensive. You can scale and spin the 3-D object, wrap and rotate the image around the object, and change the orientation and position of the light source. The preview is large enough so you can accurately judge the outcome of the filter, and you can interrupt the preview at any stage. As for features, my only wish is that the filter could generate its own mask around the finished 3-D object so you could easily composite it against other images. As it is, though, you can set the object against the equivalent of a blue screen and use Photoshop's channel operations to generate a mask.

Suffice it to say that if you've ever wanted to wrap images around 3-D renderings, create photographic cubes, or perform true perspective manipulations, Andromeda's Three D Filter can't be beat.

Pressed Text The Boss filter from Alien Skin's The Black Box package creates embossing effects by adding beveled edges around the perimeter of a selection. I applied the filter using the Rounded, Flat, and Mesa bevel options. Separately, I lightened the characters to make them stand out better.

The Three D's of Imagery I used Andromeda's Series 2, Three D Filter, to wrap and repeat the portrait of a Thai woman around a cylinder. I also adhered the temple (upper right) to a thin box. I created the sparkle using the Star filter from the Series 1 collection. The cloudy wedges in the lower left are the result of the Multi filter (also part of Series 1), which duplicates an image in a wagon-wheel pattern.

PAINT ALCHEMY 1.0.2

Paint Alchemy ($99) from Xaos Tools (415/487-7000) is less a collection of filters than a unique image-editing environment that happens to run inside Photoshop. The plug-in repeatedly applies an 8-bit brush shape to the selected portion of an image, resulting in impressionistic and painterly effects. For example, by applying a gradient sliver of a brush to an image, I was able to convert the smooth skin of a woman's face to a complex series of interwoven fibers (see "Creating Order within Xaos").

Any filter this versatile must take a while to master, and Paint Alchemy is no exception. In fact, the interface is complicated enough to put off even seasoned Photoshop users. The filter's single dialog box is made up of five dense panels of options. The preview window doesn't work unless you assign the filter sufficient memory, which is a surprisingly confusing process. You can load only one brush shape at a time, and assigning too little memory can prevent you from doing that as well.

If you manage to come to terms with these and other interface anomalies, you'll tap into Paint Alchemy's virtually limitless reservoir of powerful brush

Creating Order within Xaos I embellished this image using two separate filters from Xaos Tools. The strokes of the fibers on the woman's face and arms are actually 8-bit brush shapes I applied using Paint Alchemy. The strokes rotate according to the hue of the image, and they stretch and shrink based on the brightness. To create the kaleidoscopic pattern of spinning faces in the background, I used a reduced version of the face as a source image inside Xaos's Terrazzo.

Vortex Overload This image features five applications of Kai's Power Tools' Vortex Tiling filter, which spins and duplicates an image into Spirograph patterns. I used the filter to create a mask and pasted the portrait of the woman inside it (upper right). I achieved other effects with the Fractal Explorer, Gradient Designer, Texture Explorer, and Glass Lens Soft filters, all part of KPT.

effects. Paint Alchemy offers 75 predefined brush shapes and gives you the ability to create brushes as well. (A second set of 50 brushes, called Floppy Full of Brushes, sells for $19.95.) You can control the layering, angle, size, and transparency of brushstrokes, as well as randomize their placement. In addition, you can randomize brushes over time when using Paint Alchemy inside QuickTime applications such as Premiere and After Effects. Paint Alchemy doesn't offer the ability to create gradual pattern morphing—which, alas, would be great for turning hairs into crawling worms—but you can move the filter pattern with the QuickTime movie so the pattern doesn't look like a stationary screen.

Xaos Tools plans to release a native Power Mac version of Paint Alchemy before the end of this year. In the meantime, a special version of the program—version 1.02F—accelerates the filters on 680X0 Macs with math coprocessors. Regardless of how long it takes to apply the filter, the result is usually worth the wait. In fact, Paint Alchemy wins my vote as the single most versatile and useful plug-in currently available for Photoshop.

TERRAZZO 1.0

Xaos Tools' other plug-in program, Terrazzo ($199), fills a selection with a repeating pattern from the same image (or another image saved to disk). You can select from 17 duplication symmetries: one positions a right-side-up duplicate next to an upside-down one; another flips the image left, then right, then up, then down; and so on. Pulling off any of these patterns would be next to impossible without Terrazzo.

Inside its dialog box, Terrazzo displays the selected region of your image along with an inset polygon that you can scale and move to surround the portion of the image you want repeated. If you want your pattern to hail from a different image, you can open any PICT file from inside the dialog box. To ensure that the patterns mix smoothly, Terrazzo lets you adjust the feathering applied to each element. A preview window shows the results of your settings.

Terrazzo is useful and flexible, and it's ideal for creating textural backgrounds. But it's not without problems. First, compared with other plug-in packages, it's overpriced. It's about half as powerful as Paint Alchemy, for example, but it costs twice as much. Also, the dialog box badly needs a scale option. As things stand now, you have to reduce or enlarge the source image to change the size of the pattern elements. And the preview constantly tries to update the screen, slowing some editing operations to a crawl. Even if you turn off the Continuous Preview option, Terrazzo tries to sneak in a preview when the mouse is still. A simple Preview Now button would solve this problem. But despite my complaints, I found Terrazzo sufficiently capable to warrant the once-over from any serious Photoshop user. (See *Reviews*, in this issue, for more on Terrazzo.)

KAI'S POWER TOOLS 2.1

I prefer Paint Alchemy to any single filter in HSC Software's (310/392-8441) popular $199 plug-in collection, Kai's Power Tools (KPT). But when you

THE TOP FIVE PLUG-INS

Suppose you're stranded on an incredibly beautiful tropical island. You discover an abandoned beach house stocked with all the amenities of carefree living, including more daiquiris, trash novels, and reggae albums than you can use in a lifetime. There's even a Power Mac equipped with Adobe Photoshop for those occasional times when you've had too much sun. But thanks to some irritating hard disk limitations, you can load only five Photoshop plug-in modules—from absolutely any collection or vendor—onto the computer. Which ones should you choose? If I were you, I'd pick the following filters, listed in order of preference.

1. Paint Alchemy (Xaos Tools). OK, so it doesn't have the best interface on the planet, and its filter performance can be slow. But you can do more with this one plug-in than any other filter I know of. It's nothing short of a special-effects factory.

2. KPT Texture Explorer, part of Kai's Power Tools 2.1 (HSC Software). As its name implies, this filter requires some experimentation. You can't say, "Gosh, I'd like to create a pattern of interlocking turtles," and expect to find them. Rather, you have to play around until you stumble on something that looks like a turtle and then fine-tune it. Even if you never find your turtles, you'll run into a bunch of other patterns that may eventually prove more useful.

3. Andromeda Series 2, Three D Filter (Andromeda Software). Like any three-dimensional rendering environment, Andromeda's Three D Filter takes some time to learn. But once you master its vast supply of options, you'll be able to wrap images around spheres, boxes, and cylinders without the need for more expensive, stand-alone 3-D applications. The renderings are superb.

4. KPT Gradient Designer, part of Kai's Power Tools 2.1. The gradient tool is one of Photoshop's most limited features. KPT Gradient Designer, on the other hand, is the best gradient generator I've seen inside any graphics application. This plug-in allows you to add as many colors as you like, position colors exactly, and mix in translucent gaps.

5. Terrazzo (Xaos Tools). This plug-in repeats a specified portion of an image to form a tile pattern. Terrazzo isn't limited to square upright tiles, like those you see on your Finder desktop every day; it lets you select from 17 different symmetry options and feathers the tiles together seamlessly. The interface needs some work, but the results are first-class.

combine KPT's 37 filters (all accelerated for Power Macs), you get a package that's much more powerful than Paint Alchemy—despite the fact that most of KPT's filters are practical if not particularly exciting variations on Photoshop's built-in filters. For example, you can use KPT to apply several variations on Photoshop's Gaussian Blur, Noise, and Find Edges filters, and the program also supplies filters such as Pixelbreeze for streaking colors across a selection, and Glass Lens for distorting an image inside a sphere.

Vortex Tiling, which repeats an image in spiraling circular formations, is probably the most exciting filter new to version 2.1 (see "Vortex Overload"). With only about ten variations, it's not the most versatile filter on earth, but I had a lot of fun with it.

In addition to its hefty supply of one-shot filters, KPT includes three Explorer plug-ins that make the entire package worthwhile. The Gradient Designer filter lets you create complex, multicolor gradations and apply them either to the interior of a selection or along its outline. You can specify as many colors as you like and request various levels of translucency so the gradient fades in and out of your image.

If you're looking to add wild patterns and backgrounds to an image, the Fractal Explorer generates what seems like an infinite supply of fractal motifs. The filter is fairly daunting to use: you have to painstakingly wander around a mathematical fractal model to find an appealing pattern—much as if you were examining the edges of an insect shell under a microscope. The Fractal Explorer is not everybody's cup of tea, but it can yield some outstanding results.

My favorite KPT filter is the Texture Explorer, which generates repeating tile patterns out of thin air. The tiles are mathematically generated, so there's no need to work from a scanned image (as you must with Terrazzo); yet some of the results are remarkably realistic.

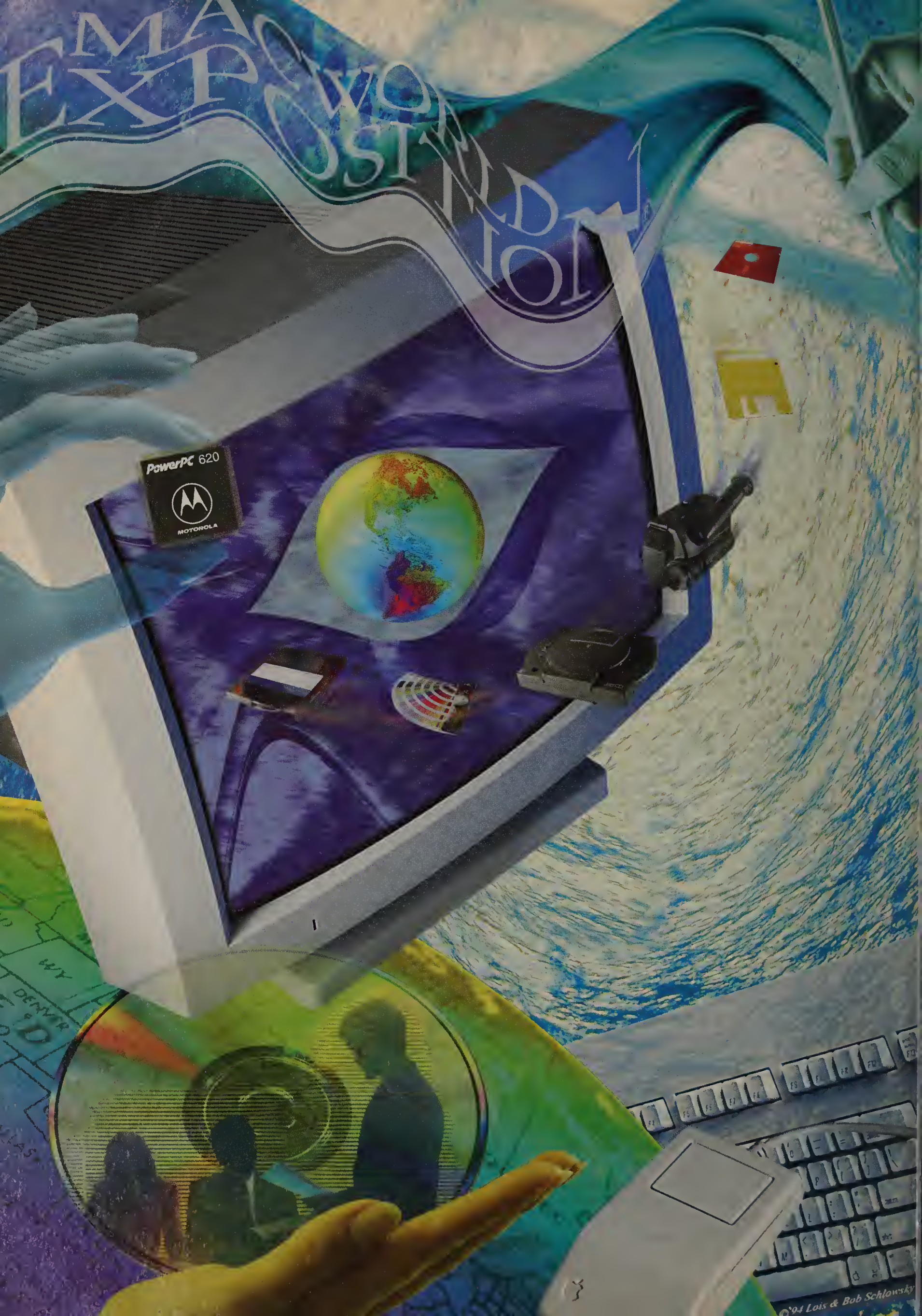
KPT includes hundreds of predefined patterns. You can even colorize patterns using gradations defined in the Gradient Designer. Powerful capabilities plus a carefully designed (though highly unusual) interface make KPT the most extraordinary collection of filters available to Photoshop users.

THE LAST WORD

If you can afford to buy only one filter package, Kai's Power Tools is the one. It includes a handful of focus filters, some noise filters, and a few distortion filters, all straightforward enough to accommodate the new user while remaining stalwart enough to please the experts. And when you finally get around to the Explorer modules, you'll discover a whole new world of image editing—a world as rich and addictive as Photoshop itself.

Those who are looking to bolster an existing library should consider Xaos Tools' Paint Alchemy and Andromeda's Series 2 (Three D Filter). Both are first-rate tools that enable you to perform feats well beyond Photoshop's native capabilities. But be prepared for some complex working environments; it's not that these programs don't make sense, they just require a little experimentation. And if your appetite for plug-ins still isn't satisfied, check out Xaos Tools' Terrazzo and The Black Box from Alien Skin. Neither product is as all-out powerful as my first three recommendations, but both do provide access to unique effects that serious image editors will find useful. **m**

Contributing editor DEKE McCLELLAND is the author of the *Macworld Photoshop Bible* (IDG Books Worldwide, 1994) and the host of "Digital Gurus," a how-to show airing on the Jones Computer Network that covers Photoshop, Painter, Kai's Power Tools, and other graphics programs.


MAC EXPO
WORLD POINT
PowerPC 620
MOTOROLA
©'94 Lois & Bob Schlowsky

WHERE IT ALL COMES INTO VIEW

JAMMIN' ON THE FORMATION HIGHWAY

ot-to-be-missed
eynote session
featuring:

Kai Krause
omas Dolby
rles Fleischer
rbie Hancock
raham Nash
ld Rundgren

any last minute demands by
e entertainment world)

ON'T MISS
E INDUSTRY
TERCHANGE!

YOU'VE EXPERIENCED THE EXCITEMENT OF THE FIRST GENERATION OF MACINTOSH SYSTEMS.

NOW SEE THE POWER OF THE NEXT GENERATION.

TECH DEMOS

- Industry experts available to answer all your questions.
- See the latest in Macintosh and cross-platform technology.
- Witness cutting-edge product demonstrations.

SHOW SPECIALS

- Thousands of hardware, software and peripheral products.
- Side-by-side product comparisons to help you make informed decisions.
- Take advantage of special show offers.

For those who develop, produce, or sell Macintosh software, hardware, or peripherals – the INDUSTRY INTERCHANGE at MACWORLD Expo/ San Francisco is your opportunity to:

Meet
directly with key industry analysts and Apple executives

Hear
the latest on industry trends

Exchange
information and ideas on crucial industry issues

Find out
what's likely to happen in the future

Pinpoint
new areas for increasing your Macintosh profits

FOR A BROCHURE ON THE INDUSTRY INTERCHANGE *call* 617 361 6443

For more information on these "Trade Talks" sponsored by Apple Computer and *Macworld Magazine* call today!

MacIS Resource Center

If you are an IS professional interested in discovering innovative ways to maximize Apple technology and learning about significant technological directions — you'll want to be sure to visit the MacIS Resource Center, where you can meet with members of other organizations challenged with integrating Apple computers into their information systems environment!

MacSciTech Resource Center

If you are an engineer or scientist working with computers, you know the importance of up-to-date information — so don't miss the MacSciTech Resource Center, where you can connect with Macintosh users in chemistry, biology, computer science, design/test engineering, physics, mathematics and more!

Special Added Attractions @ MACWORLD Expo San Francisco

Discover the Creative Possibilities

At MACWORLD Expo/San Francisco, make side by side comparisons of thousands of Macintosh hardware, software, peripheral and service products. Have a question? Need an expert opinion? Our on-site Macintosh professionals lend their expertise to help you choose the best products for your individual needs. We'll help you take your Macintosh to the max!

MACWORLD Expo/San Francisco; January 4–7, 1995

MACWORLD Expo/San Francisco will cover 400,000 square feet of exhibit space at Moscone Convention Center. When you come to MACWORLD Expo/San Francisco, you'll see uses and applications for the Macintosh in a variety of areas including: Networking, Spreadsheet Analysis, Databases, Education, Research, Word Processing, Accounting, Law, CAD/CAM, Forecasting, Design, Publishing, Illustration, Animation, Music, Programming, Entertainment and Multimedia. Plan to be in San Francisco from January 4-7 and experience the Macintosh at its absolute best!

JAMMIN' ON THE INFORMATION HIGHWAY

Keynote Session: Technology visionary Kai Krause has invited several prominent travelers on the Information Highway to join him in a lively discussion of what this long and winding road might lead us to. Confirmed to date (barring any last-minute demands by the entertainment world) are:

Thomas Dolby
Charles Fleischer
Herbie Hancock
Graham Nash
Todd Rundgren

Pre-Registration Savings!

Now is the time to pre-register for MACWORLD Expo/San Francisco. Return the attached pre-registration form with your payment by December 1, 1994 and save $30 on all Conference sessions* and Exhibits ($120 now vs. $150 at the door). An Exhibits-only admission saves you $15 ($25 now vs. $40 cash only at the door). And since your time is as valuable as your money, we'll send your admission badge early when you pre-register. Avoid the registration crowds and get a jump start on the exhibition!

*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice.

THE CONFERENCE PROGRAM

Tomorrow's Innovations Today

Here's a preview of MACWORLD Expo/San Francisco's 14 separate conference programs, from which you can create your own information-rich agenda:

1. The PowerPC Conference.

Everything there is to know about PowerPC — for users, vendors, and developers — including: new capabilities, features, functions, interfaces; compatibility and performance issues; dazzling new software and works-in-progress; upgrading/what to buy when; optimizing performance; next generation plans; new horizons for developers; and more.

2. The Design Conference.

Celebrated Mac designers share creative insights and power-user tips on: color management; creative imaging; prepress; digital photography; new media; digital art; key designer tools; and more.

3. The Entertainment Conference.

The best in the business present tools and techniques for TV, films, and commercial applications, featuring: interactive cinema; QuickTime movies; digital video; music; innovative effects; virtual reality; broadcast quality graphics; and more.

4. The Connectivity Conference.

Enhance communications, maximize networks, and see what's in store for the future with: cross-platform issues, client/server technology, e-mail connectivity, networking Newtons, TCP/IP, remote network connectivity, network management tools, troubleshooting AppleTalk, and more.

5. The Small Office/Home Office Conference.

Whether you're operating a smaller-size company — or running a business out of your home — or doubling the power of your work environment with a remote office in your home, your needs are different than organizations with hundreds or thousands of employees. See how other Macintosh users in home offices and small businesses are solving the kinds of problems that plague you most.

6. The Science/Technology Conference.

The Mac as a critical tool in laboratory and scientific settings, including tips on visualization using QuickTime, scientific data analysis, and virtual reality.

7. The Programmer/Developer Conference.

For in-house developers, veteran independents, and novice Mac techies alike: how to capitalize on the new world of opportunities in programming for Newton and PowerPC — plus valuable insights on AppleScript, OpenDoc, OLE, AppleSoft Solutions Tools, and more.

8. The Education Conference.

Educators share successful Mac experiences with multimedia, CD-ROM, HyperCard, telecommunications, QuickTime, Internet — and students demo their most outstanding in-school and at-home Mac projects in science, math, social studies, desktop publishing, and more.

9. The How-to-Get-Started Conference.

Learn the basics — of Newton, desktop publishing, telecommunications, on-line services, the Internet, design, multimedia, QuickTime, interactivity, and using CD-ROM (to name but a few).

10. The Advanced User Conference.

Veteran users share their expertise and insider's tricks for the most mileage from your PowerBook, customizing your Mac, resolving system conflicts, maximizing 7.5, and hot new ideas galore.

11. The Special Interest Group Conference.

Looking to compare Mac notes with others? Develop an invaluable "user network." Here you'll find sessions on The Mac in the Law Office, Health Care, Government, and MIS; and the perennial favorite MUSE (MACWORLD Expo User Group Extravaganza).

12. Application Workshops.

Intensive training sessions by MacAcademy on: Beginning Macintosh; Intermediate Macintosh; Advanced Macintosh; Macintosh Fonts; Claris FileMaker Pro; Microsoft Word; Aldus PageMaker; Microsoft Excel.

13. The Multimedia Conference.

Create quality productions and presentations with both high-end and low-end multimedia tools. Share insights from the world's most successful multimedia experts on interactivity, desktop video, animation, interface design, authoring tools — and see the profitable impact in education, museums, and more.

14. The CD-ROM Conference.

Want to publish an entertainment or consumer CD-ROM? Start with the Mac. Learn about building successful titles; developing interactive games; content licensing; document conversion and management; search and retrieval; marketing your CD-ROM; and more.

MACWORLD EXPO
SAN FRANCISCO
MOSCONE CENTER

Exhibition Hours
January 4-7: 10:00 a.m. - 6:00 p.m.

Conference Hours
January 4-6: 10:30 a.m. - 6:00 p.m.
(No Conferences on January 7)

PRE-REGISTER FOR MACWORLD EXPO/SAN FRANCISCO BY DECEMBER 1, AND SAVE $15 TO $30

PLEASE REGISTER ME FOR:

❑ Package One $120.
Conference sessions* and exhibits. Pre-register by December 1 ($150 at the door).

❑ Package Two $25.
Admission to exhibits only. Pre-register by December 1 ($40 cash only at the door).

❑ Check if Applicable.
I'm an international attendee. Please ship my badge by Federal Express. Enclosed is an additional $45.

Please choose your package and fill out the form completely. **Incomplete forms will be returned**. One form per person; make photocopies for additional people. Registration forms received after December 1 will be returned unprocessed. Purchase orders cannot be accepted. **All registration fees are non-refundable**. A $20 fee will be charged for all returned checks. Send completed forms to:

MACWORLD Expo/San Francisco
P.O. BOX 4010
DEDHAM, MA 02027

U.S. BADGES: Mailed on or around December 16.
INTERNATIONAL BADGES (Including Canadian): Held on-site at the International Pre-registration counter

Badge Pickup hours are:
January 3, 11:00 a.m. - 4:00 p.m.; January 4-7, 9:00 a.m. - 6:00 p.m.

Please send my registration badge and further information to:

Please check one: ❑ Home Address ❑ Company Address

First Name ___ M.I. ___ Last Name ___

Street Address ___

City ___ State ___ Zip Code ___-___

Country (Other than U.S.) ___ Telephone ___-___-___

If mailing to company address: *(If mailing to your home address, leave the next two lines blank).*

Title ___

Company ___

❑ Check enclosed (make payable to MACWORLD Exposition) Amount $ ___

❑ Master Card ❑ Visa ❑ American Express Amount $ ___

Account Number ___

Expiration Date (include all numbers) ___ ___

Card Holder Signature (Signature necessary to be valid) ___

If card holder is other than registrant, please print card holder's name below:

First Name ___ M.I. ___ Last Name ___

Cash only at the door. After December 1, you must register at the show.

Please check the appropriate information:

YOUR INDUSTRY OR PROFESSION
(choose only one)
1. ☐ Accounting/Finance
2. ☐ Architecture/Construction
3. ☐ Art/Design/Creative Services
4. ☐ Arts & Entertainment
5. ☐ Communications/Printing/Publishing
6. ☐ Computer Reseller/VAR/VAD
7. ☐ Consulting
8. ☐ Corporate/General Management
9. ☐ Distributor/Dealer/Retailer/Service
10. ☐ Engineering/R&D
11. ☐ Government/Military
12. ☐ Health/Medical Services
13. ☐ College/University
14. ☐ Elementary/High School
15. ☐ Legal Services
16. ☐ Manufacturer (Computer Industry)
17. ☐ Manufacturer (Non-computer Industry)
18. ☐ Marketing/Sales/PR/Communications
19. ☐ Other
20. ☐ Does Not Apply

YOUR TITLE
(choose only one)
21. ☐ CEO/President/VP
22. ☐ Controller/Treasurer/Accountant
23. ☐ DP/MIS Manager
24. ☐ Network Manager
25. ☐ Programmer/Analyst
26. ☐ Engineer/Scientist/R&D
27. ☐ Manager/Department Head
28. ☐ Professional (Lawyer, Doctor, etc.)
29. ☐ Consultant
30. ☐ Marketing/Sales
31. ☐ Educator
32. ☐ Art Director/Graphics
33. ☐ Editor/Writer
34. ☐ Student
35. ☐ Other
36. ☐ Does Not Apply

SIZE OF YOUR ORGANIZATION
(number of employees national & international - choose only one)
37. ☐ Under 50
38. ☐ 50 - 99
39. ☐ 100 - 499
40. ☐ 500 - 999
41. ☐ 1,000 & over
42. ☐ Does Not Apply

WHICH PERSONAL COMPUTER(S) DO YOU OWN/USE?
(choose all that apply)
43. ☐ Macintosh Plus/SE/SE30
44. ☐ Macintosh Classic Series/LC Series
45. ☐ Macintosh Powerbook Series/Duo Series
46. ☐ Macintosh II Series
47. ☐ Macintosh Performa Series
48. ☐ Macintosh Centris Series
49. ☐ Macintosh Quadra Series
50. ☐ Macintosh Workgroup Series
51. ☐ PowerMAC
52. ☐ IBM PC or compatible
53. ☐ Other
54. ☐ None

DO YOU RECOMMEND, BUY, OR APPROVE MICROCOMPUTER SOFTWARE AND/OR PERIPHERALS?
55. ☐ Yes
56. ☐ No

IF YES, PLEASE INDICATE FOR HOW MANY MACINTOSH COMPUTERS YOU HAVE THIS INVOLVEMENT.
57. ☐ 1 - 10
58. ☐ 11 - 25
59. ☐ 26 - 50
60. ☐ 51 - 100
61. ☐ 101 - 500
62. ☐ 501 +

*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice.

NOV

All registration fees are non-refundable. Send completed form with payment to: MACWORLD Expo, P.O. Box 4010, Dedham, MA 02027. For overnight packages ship to: 260 Milton Street, Dedham, MA 02026.

ATTENDING MADE EASY

MACWORLD Expo/San Francisco 1995. Moscone Convention Center, 747 Howard Street, San Francisco, CA. January 4-7, 10:00 a.m. - 6:00 p.m.

U.S. Attendees.

Badges will be mailed on or about December 16. Be sure to check box indicating where badge should be sent.

International Attendees.

International Badges (including Canadian) will be held for pick-up at the International Pre-registration counter at Moscone Center. Badge Pickup hours are: January 3, 11:00 a.m. - 4:00 p.m.; January 4-7, 9:00 a.m. - 6:00 p.m. For Federal Express service, check the appropriate box on the pre-registration form and add $45 to your pre-registration fee. Fill in your exact street address (no P.O. boxes) and include your telephone number and country code. We will Federal Express your badge directly to you.

Fly American Airlines and Save.

Enjoy savings on applicable fares when you fly American Airlines, the official airline of MACWORLD Expo. American is offering attendees discounts of 5-10% on most fares. Dial 800-433-1790 to speak with an American Airlines reservationist and reference Star File #SØ1D4AL. Savings are available on applicable fares only.

Car Rental Discounts From Alamo.

Alamo Rent a Car has been appointed the official car rental company for MACWORLD Expo/San Francisco and special discounted rates have been extended to attendees. These rates are available one week before and after the meeting dates and include unlimited free mileage. To make reservations call Alamo at 1-800-732-3232 and request group I.D. #382751 and rate code GR. Advance reservations are required.

Hotel Accommodations

Participating hotels in the San Francisco area are offering MACWORLD Expo discounts. To receive the preferred rate, call one of the hotels listed and mention you'll be attending MACWORLD Expo. There are only a limited number of rooms at the preferred rate and they sell-out quickly. Make your reservations by November 30 for the best selections (rates and availability cannot be guaranteed). Prices reflect single and double occupancy. If you are reserving 10 or more rooms, you must supply the hotel with a rooming list and a non-refundable deposit for the first night, no later than November 18.

Save Up to $30 Pre-Register by December 1!

Save $15 – $30 on your Expo package when you pre-register by December 1. We'll send your badge early to help avoid the crowds.

Hotel	Single/Double	Telephone
ANA Hotel 50 Third St., San Francisco, CA 94103	$149/149	(415) 974-6400
Fairmont Hotel 950 Mason Street, San Francisco, CA 94108	$105/105	(415) 772-5000
Four Seasons Clift Hotel 495 Geary St. at Taylor, San Francisco, CA 94102	$150/160	(415) 775-4700
Grand Hyatt 345 Stockton St., San Francisco, CA 94108	$142/142	(415) 398-1234
Holiday Inn Civic Center 50 Eighth St., San Francisco, CA 94103	$99/114	(415) 626-6103
Holiday Inn Golden Gateway 1500 Van Ness Ave., San Francisco, CA 94109	$69/79	(415) 441-4000
Holiday Inn Union Square 480 Sutter St., San Francisco, CA 94108	$120/120	(415) 398-8900
Hotel Nikko 222 Mason St., San Francisco, CA 94102	$138/154	(415) 394-1111
Hyatt Regency San Francisco 5 Embarcadero Center, San Francisco, CA 94111	$139/169	(415) 788-1234
King George Hotel 334 Mason St., San Francisco, CA 94102-1783	$102/112	(415) 781-5050
Orchard Hotel 562 Sutter Street, San Francisco, CA 94102	$90/95	(415) 433-4434
Parc Lane's Parc Fifty-Five 55 Cyril Magnin St., San Francisco, CA 94102-2865	$125/125	(415) 392-8000
Ramada Hotel at Fisherman's Wharf 590 Bay Street, San Francisco, CA 94133	$90/95	(415) 885-4700
San Francisco Hilton 333 O'Farrell Street, San Francisco, CA 94102	$135/145	(415) 771-1400
San Francisco Marriott 55 Fourth Street. San Francisco, CA 94103	$164/184	(415) 896-1600
Sheraton Palace Hotel 2 New Montgomery St., San Francisco, CA 94105-3402	$152/172	(415) 392-8600
Sir Francis Drake Hotel 450 Powell St., San Francisco, CA 94102	$125/135	(415) 392-7755
Stouffer Stanford Court Hotel 905 California Street, San Francisco, CA 94108	$129/129	(415) 989-3500
Westin St. Francis 335 Powell St., San Francisco, CA 94102	$137/137	(415) 397-7000

Services for the Physically Challenged.

We're committed to ensuring that our physically challenged attendees receive all the services they need to make their visit enjoyable. Call us at 800-945-3313 for details.

Pre-recorded Information.

For pre-recorded information about MACWORLD Expo/San Francisco, call the MACWORLD Expo Information Hotline at 617-361-3941. 24-hours a day, seven days a week.

Early Bird Registration.

Missed the pre-registration date? You can still register before the start of the show! On-site Early Bird Registration is from 11:00 a.m. - 4:00 p.m. on January 3 at the full registration rates of $150 for all Conference Sessions and Exhibits, and $40 (cash only at the door) for Exhibits-only admission.

Take the Shuttle and Enjoy the Free Ride.

Complimentary shuttle service is available from the Cow Palace and Cal Train. Look for specifics in your pre-registration package. Moscone Center is accessible from 80 East, 4th Street Exit; from the Bay Bridge, Fremont Street Exit; and from Golden Gate, Lombard Street Exit. Call 415-974-4000 for detailed directions.

MACWORLD EXPOSITION

EDITED BY DAN LITTMAN

At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

Quicken 5 Puts Money under Microscope

THE BIGGEST CHANGE IN VERSION 5.0 of Intuit's personal-finance and small-business bookkeeping package Quicken is a great increase in ways to look at your financial picture. For example, the program can show cash flow, bills coming due, and so on, in a calendar view; you can open and modify transactions (including recurring transactions) from the calendar; and you can add an individual financial event, such as a vacation or an estimated tax payment, to a financial-forecast time line to see its impact. Creating reports is also simpler than in version 4.0.

Quicken 5.0 borrows some tax capabilities from MacInTax, which Intuit acquired last year when it bought Softview, and it can categorize transactions for tax purposes and later transfer them to MacInTax. The new version of Quicken puts frequently used commands on an icon bar, lets you see and edit its list of memorized transactions, and can log on to CompuServe to download current securities prices. Quicken 5.0 should ship in October at $49.95; the upgrade from 4.0 is $29.95. Intuit, 415/322-0573.—D.L.

ALLEN WALLACE

New Homes for Documents

PC DOCS AND THE RECENTLY ACquired WordPerfect subsidiary SoftSolutions, two leading vendors of electronic document-management systems, are developing Mac clients.

SoftSolutions' standard fields for profiling documents, where the user adding documents to the archive records topic, author, and other information, are static, but the profile includes 16 user-definable fields. SoftSolutions sells Windows and DOS add-ons for recording document usage, creating a custom interface, and other functions; the company has not decided which add-ons it will develop for the Mac. The Mac client should ship this year. Pricing was not set at press time. SoftSolutions, 801/226-6000.

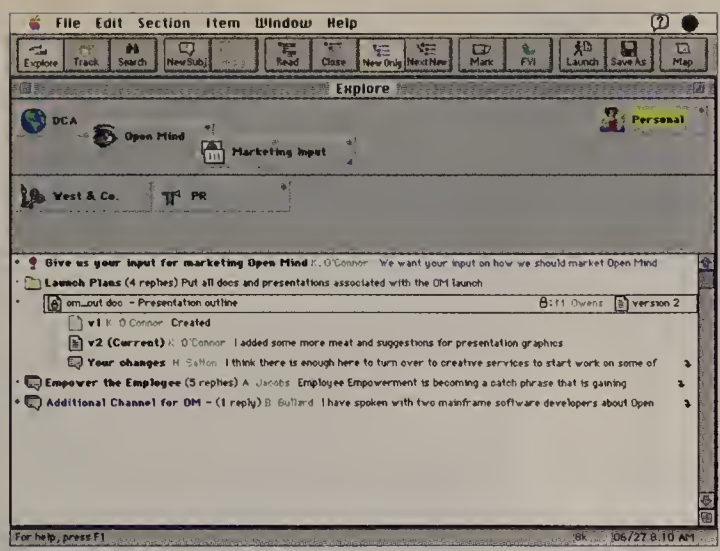
PC Docs' Docs Open runs on any standard SQL database engine and provides a point-and-click interface for adding or modifying fields in the document profile. The administrator can set up controls requiring users to fill in certain fields. Docs Open can read and index data from about 150 common applications and can search the contents of documents as well as their profiles. The system's distinguishing feature is Check Out, which allows a user to work on a document offline and temporarily block other users from modifying the document. The ship date for the Mac client is expected to be in the first quarter of 1995. It lists for $295; volume purchases are less per user. PC Docs, 904/942-3627.—D.L.

DCA Takes On Lotus Notes

A NEW GROUPWARE SYSTEM UNDER development by a company previously known for mainframe connectivity products takes a different approach from that of Lotus Notes to gathering and sharing information.

DCA's OpenMind combines document archiving with group-discussion management; OpenMind indexes docu-

ments loaded into the system (DCA says OpenMind reads about 150 file types), and users can search using Boolean and proximity operators. You can navigate discussions—about indexed documents as well as unrelated topics—in the Transcript view, which shows the first line of each comment, supports threading and branching, and can notify participants in a discussion when new comments are added.



DCA's group-discussion manager, OpenMind, can display the first line of each entry in a threaded series of comments.

OpenMind is designed to be used with a modem or other remote-access tool, as well as on a LAN. It requires a Windows NT server, which lists for $995 and should be shipping by the time you read this; the Macintosh client should ship in October, and client pricing starts at $295 per user and drops to $225 per client for large purchases. DCA, 404/442-4495.—D.L.

Mac's Spreadsheet World Diversifies

A NEW SPREADSHEET WITH light hardware demands and a curious history will ship soon. U.S.-based Mariner Software's Mariner has long been available here as shareware; with help from a Japanese distributor, it was perfected for commercial sale in Japan and is now heading for the U.S. commercial market. It will list for $99 and be available late in 1994.

Mariner 3.05, the current beta version, isn't meant to challenge Microsoft Excel: it runs comfortably in 1MB of memory and takes up only 600K on disk. However, it provides one thing Excel can't touch: true 3-D worksheets—that is, the ability to arrange and manipulate data in rows, columns, and layers. Mariner creates graphs and provides 102 functions for math, trig, finance, statistics, time and logical operations, and manipulating worksheet objects. Other useful features include a set-print-area command, dynamic headers and footers, table-formatting templates, and tiling or cascading of open windows. When Mariner ships it will support drag and drop and have a spelling checker. Mariner lacks array manipulation and a macro language; the program can import SYLK files but not native Excel files.

The company is also anglicizing its unnamed Japanese word processor, which the company says is on a par with WriteNow. It should ship by year's end for $99. Both programs will be available in 680X0 and native Power Mac versions. Mariner, 502/222-1308.—D.L.

IN BRIEF

■ **Arrange Rearranged** The personal-information-manager construction kit Arrange has been revised to version 2.0 with new features that increase its flexibility. To the way Arrange stores information in user-defined, interwoven, hierarchical lists—containing contact names, appointments, to-dos, and so on—Arrange 2.0 adds calendar views and user-designed form views. Common Knowledge has also made Arrange's programming interface available, and the company says third-party developers are coding add-ons for version 2.0; one of the first to ship will be a calculation engine for use in time billing and other applications that take advantage of the forms-design tools. Arrange 2.0 lists for $349. Common Knowledge, 415/325-9900.

■ **WordPerfect Fax Software** Novell subsidiary WordPerfect is developing a fax-and-data-communications package designed to work with standard modems and fax modems. ExpressFax Plus 3.0 can forward incoming faxes to another fax device; automatically print an incoming fax or convert it to text with the built-in Xerox TextBridge optical character recognition engine; combine multiple documents in a single fax document; and schedule a queue of faxes for delivery at specified times. It will list for $109 and should ship in September. WordPerfect, 801/225-5000.

Where Paper Goes When It Dies

WHAT TO DO WITH ALL THOSE OLD papers? You know, those bankers' boxes full of personnel memos and IRS documents from 1980? Why, throw them in the recycling bin, of course—after converting them to electronic format.

Systems Engineering Solutions (SESI) is shipping Imaxis, a system for creating electronic archives from paper documents (Imaxis archives can also include documents created on a computer). Imaxis integrates tools for scanning documents, cataloging and annotating them, extracting their text, and finding the documents again when you need them. The interface is designed to make it easy to reproduce your office's filing system, and users can browse through files, search by document content or catalog information, and set bookmarks. Imaxis also provides a hierarchical security system for controlling the ability of individuals and groups to see or alter sets of documents.

Imaxis is geared toward small workgroups: it lists for $2695 for one server and one scanning module with four client modules—about one-tenth the cost of BlueRidge's Optix and Microdynamics' MARS, two Mac systems designed for larger installations. Imaxis components are available separately for later expansion. SESI, 703/573-4366.—D.L.

"The best online trading software I've seen."

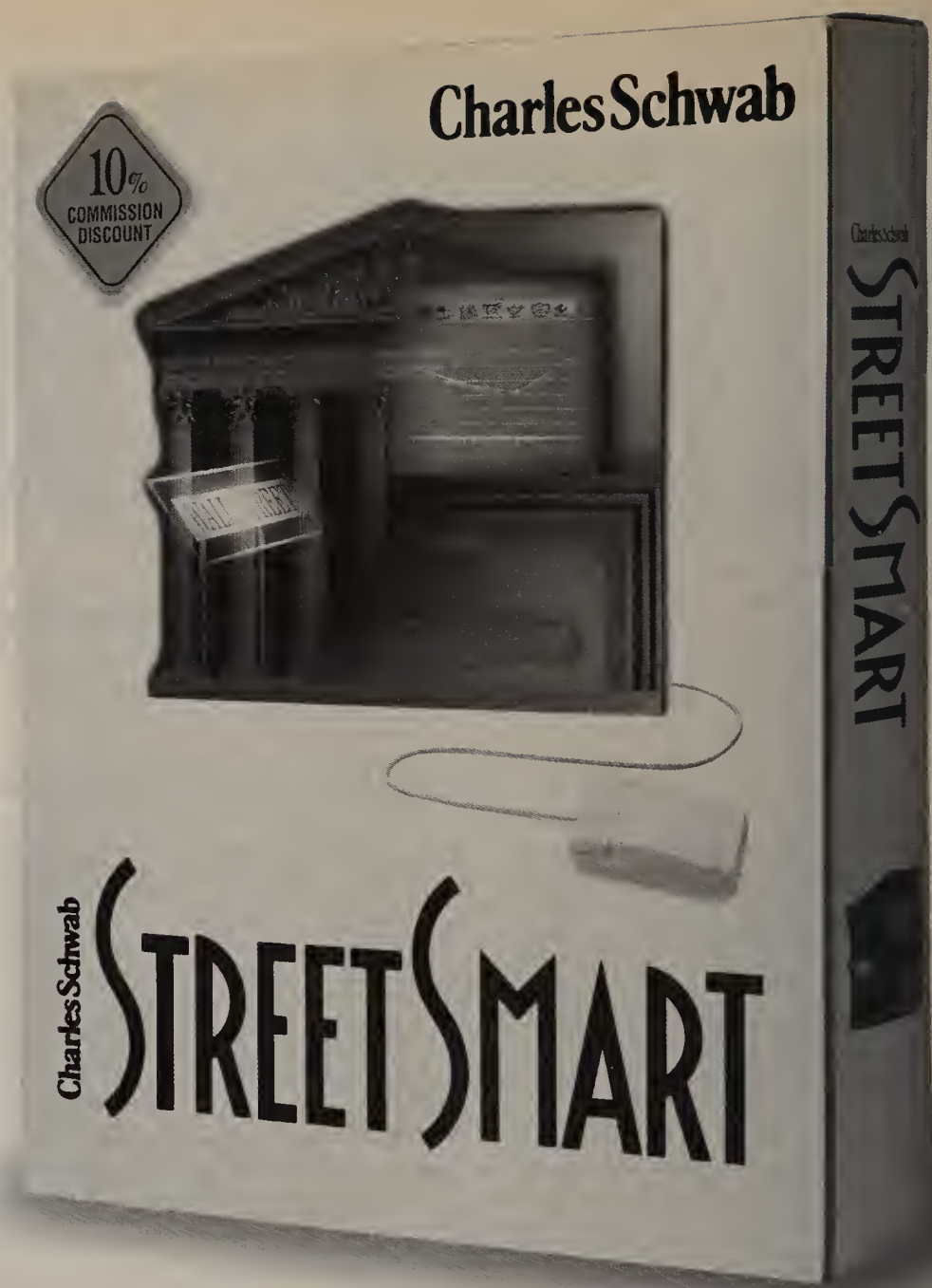
– Walter Mossberg, *SmartMoney* (2/94)

"The newest, brightest and jazziest brokerage software."

– *Forbes* (6/20/94)

"A pioneer of electronic investing."

– *Newsweek* (6/6/94)



SCHWAB'S WIDELY ACCLAIMED INVESTMENT SOFTWARE LETS YOU ACT LIKE YOUR OWN BROKER.

Many of today's well-known financial publications have described StreetSmart™ as a breakthrough in personal investment software.

Invest on Your Own Time

With StreetSmart, you can buy and sell stocks, bonds, options or mutual funds using your own computer. Also, you can track your account balances, check quotes and enter orders—24 hours a day.

Get Important News and Information

StreetSmart also gives you immediate access to financial newswires, research information and forecasts from independent Wall Street analysts.

Save Even More on Commissions

Plus, when you place trades with StreetSmart, you will save an additional 10% off Schwab's everyday low commissions.

Schwab's widely acclaimed StreetSmart software is available for only $59.00. Just stop by one of our more than 200 offices for a free demonstration or call:

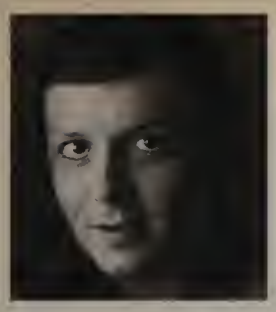
1-800-435-9258

Charles Schwab

Helping Investors Help Themselves®

Circle 277 on reader service card

©1994 Charles Schwab & Co., Inc. Member SIPC/NYSE. All rights reserved. (1L



BY JIM HEID

Working Smart

Tools and Tips for Printing Labels

REMEMBER THE DYMO LABEL MAKER? It first flashed across the consumer-product sky in the 1970s. It was shaped like a science-fiction ray gun, with a dial gizmo on top bearing all the letters of the alphabet. You dialed a character, squeezed the plastic trigger, and the Dymo embossed the character on adhesive-backed plastic tape. After a few minutes of dialing and squeezing, you had a peel-and-stick label. It was state of the art back then, especially when Dymo came out with colored tapes, including one with a handsome faux wood-grain look.

Today's label maker comes with a mouse, keyboard, and printer connected to it. Any Mac attached to a printer can produce a wide range of label types—mailing labels, videocassette labels, "Hello, my name is" badges, and more. To spare you from frustrating trials and errors and wasted label stock, many application programs include templates for popular label sizes. There are also dedicated label programs and small, inexpensive label printers that free up your big printer for bigger things (see "Little Label Printers").

Software for Labels

Current versions of Aldus PageMaker, Claris FileMaker Pro, ClarisWorks, Microsoft Word and Works, and Softkey International's WriteNow, among others, include templates for labels by Avery (909/869-8514, 800/462-8379), the biggest supplier of printer label stock. All mailing list programs—packages such as Satori Software's Bulk Mailer Plus and Software Publishers' AccuZip6—also provide direct support for common mailing and shipping label sizes. (See the March 1994 *Working Smart* for details on mailing programs.)

Then there are dedicated label-printing programs, which combine basic page-layout features with built-in templates for label stocks, such as Avery's own MacLabelPro 1.63 ($99.95); Williams & Macias's $100 StickyBusiness 1.6.4 and $225 StickyBusiness Plus 1.6.4 (509/624-5170, 800/752-4400); and MySoftware Company's $29.95 MyLabelDesigner 1.0.1 and $59.95 MyAdvancedLabelDesigner 1.5 (415/473-3600, 800/325-3508). StickyBusiness and StickyBusiness Plus are identical except that Plus supports bar codes; MyLabelDesigner and MyAdvancedLabelDesigner are also similar, but Advanced has a built-in database.

All labeling programs work similarly. You select from a menu the type of label you want to create; labeling programs make this easy by describing the label stocks that they support, including brand names and part numbers. Some programs support a much wider range of label stocks than others. For understandable reasons, Avery's MacLabelPro supports only Avery label stocks (even though MacLabelPro is based on a 1990 licensed version of StickyBusiness). The MySoftware programs include slightly more than 100 templates, while the StickyBusiness programs are the reigning template champs, with more than 500 templates for Avery labels and stock from other suppliers. These include New England Business Services, a large mail-order supplier of preprinted labels, invoices, and other business forms (508/448-6111, 800/882-5254); Inmac, a mail-order office- and computer-supply house (214/255-4000, 800/547-5444); and even United Parcel Service.

Laying Out Labels

After you specify a label size, the program provides a blank label and tools for creating text, lines, and boxes. The MyLabelDesigner and StickyBusiness programs import PICT and EPS graphics files; you can also paste graphics from the Mac's Clipboard. You might use these features to add a company logo or a scanned image to labels. The StickyBusiness packages can import icons to adorn labels for disks or removable-media labels.

These programs' layout features are crude compared with those of a desktop publishing program. Forget about fine control over letterspacing, for example, or even grouping objects to move and resize them together. MyLabelDesigner and MyAdvancedLabelDesigner have additional limitations; for instance, they provide just three line widths and don't support diagonal lines. But at least the MyLabelDesigner programs let you zoom in on a design to do detailed work; StickyBusiness doesn't.

Specialized Labeling Features

However, most programs provide more than bare-bones layout features and templates. MyAdvancedLabelDesigner has a built-in database manager that's suitable for keeping track of mailing lists, and both of the MySoftware programs can import text-only files from a database manager. StickyBusiness lacks a built-in data man-

continues

ager but provides a print merge feature.

As you might expect, a label program's real prowess is printing, with features designed to cut down on wasting labels and to make printing labels easier. For example, if you print just a few labels, you'll be left with a partially used label sheet; these programs can skip blank spots on a sheet and use up the remaining labels. Label programs also let you print multiple copies of the same label. All the programs tested can print a unique serial number on each label—a great feature for use in inventory or forms.

Williams & Macias also sells myDiskLabeler III (version 3.2.4, $80), with layout features similar to those of StickyBusiness but with templates only for floppy disks, SyQuest cartridges, and other storage media. myDiskLabeler III reads the directory of a disk or cartridge and prints its contents on a label and in report format (see "Labels for Disks"). Williams & Macias sells laser-printer SyQuest labels and other label stocks, as does MySoftware Company.

Choosing a Labeling Program

If you print only a few labels now and then and you already have a program that includes label templates, you might not need stand-alone label software. But if you do, get one of the StickyBusiness packages from Williams & Macias. They support the widest array of label stocks, they provide the best layout features, and the programs themselves are easier to use and better designed than MySoftware's packages. Both StickyBusiness packages also include a desk accessory, QuickStick, that lets you dash off a quick label.

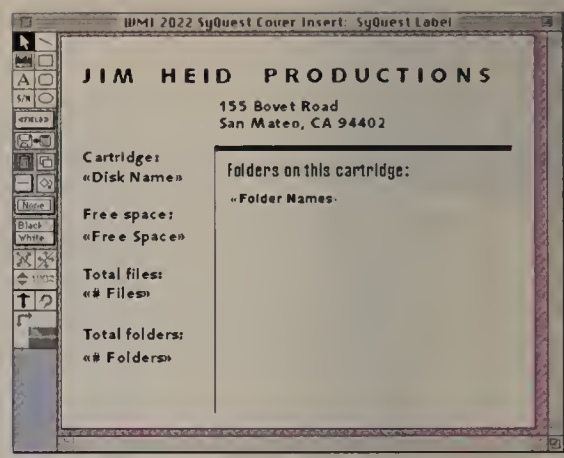
As I worked on this month's column, I wondered if label-printing programs represent The Software Category That Time Forgot. All the programs tested have a circa-1986 feel to them: no 3-D tool palettes, balloon help, or customizable user interfaces here. The StickyBusiness manual even has instructions on importing data from Microsoft's Multiplan spreadsheet, which was discontinued years ago. All the programs are compatible with System 7 and even the Power Macintoshes, but I wouldn't mind seeing them modernized.

But to their credit, all these programs run on a Mac Plus or SE and don't gobble gobs of hard disk space. In an era when more and more programs arrive on a dozen floppies, or even a CD-ROM, it's refreshing to install a program that comes on just two 800K disks. And hey, even a circa-1986 labeling package beats a circa-1970 Dymo Label Maker.

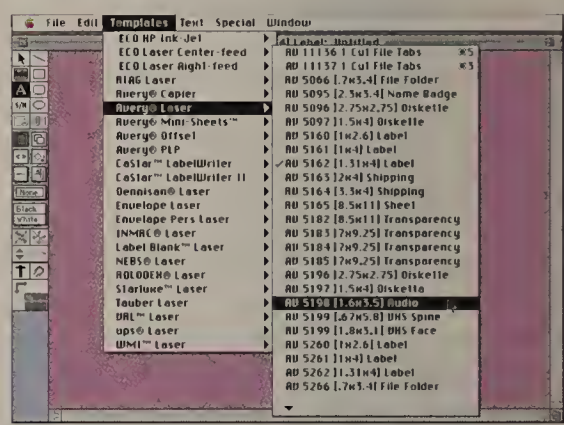
Stock You Can Stick With

Labeling software won't do you much good without labels to print on. There are many kinds of label stock available for computer printers, but be careful not to buy labels designed for typewritten or hand-written labels: they won't withstand the heat and curving paper paths of most printers, and you may end up with a gummy, expensive mess to repair.

Avery puts laser labels on an 8½-by-11-inch backing that fits in the standard paper cassette for most laser printers. The labels themselves range in shape and size from ½-inch-by-1¾-inch rectangles (80 labels per page), to 3⅓-inch circles (6 per page), to full sheets measuring 8½ by 11 inches. The full-sheet labels are especially versatile, since they can be cut to any size after printing. All of Avery's white-label stock also works with ink-jet printers such as Apple's StyleWriter II. For laser printers only, Avery also offers pastel-colored stocks in various sizes, as well as see-through labels.



Labels for Disks With Williams & Macias's myDiskLabeler III, you can make labels and inserts for disks and other removable media. It works similarly to a mail merge program, except that it prints information about each disk on the label.



Creating Labels Creating a label begins with selecting the desired template. Williams & Macias's StickyBusiness provides the largest array of label templates: more than 500.

If you want your labels to make a fashion statement, get a catalog from PaperDirect (201/271-9300, 800/272-7377). This mail-order firm is the best source I've found for offbeat paper and label stocks. The company's Designer Laser Labels line comes in more than a dozen styles—everything from billowing clouds to geometric borders to faux marble—and PaperDirect also sells paper and folders that match its labels. A box of 20 sheets (120 labels) is $19.95.

Even more stunning is PaperDirect's Laser ColorStick line, brightly colored full-sheet label stocks. The Electrix and FireBrites lines come in pink, canary yellow, and something called Bermuda Blue, but my favorite is the Metallic series: glittering gold and silver for plaques, door signs, proposal binders, and other special jobs. A box of ten is $16.95. Avery and PaperDirect also have labels for videocassettes and audiocassette tapes.

For high-volume jobs, you should use an ImageWriter II or other dot matrix printer instead of tying up a laser printer or waiting for a sluggish ink-jet machine. Dot matrix printers don't deliver typeset-quality, but they have their own advantage: you can use fanfold label stock

LITTLE LABEL PRINTERS

To avoid tying up your main printer with labeling jobs, consider a dedicated label printer such as the Smart Label Printer Plus (pictured here at right; $199.95; Seiko, 408/922-5800, 800/888-0817) or the LabelWriter XL (at left; $249.95; CoStar, 203/661-9700, 800/426-7827). The Seiko machine prints on 1⅛-by-3½-inch roll-fed labels, while the CoStar machine prints larger labels—up to 2¼ by 4 inches—and has vastly superior software that provides basic mailing list–management features, support for bar codes, and a serial-number feature.

ROBERT PERRY

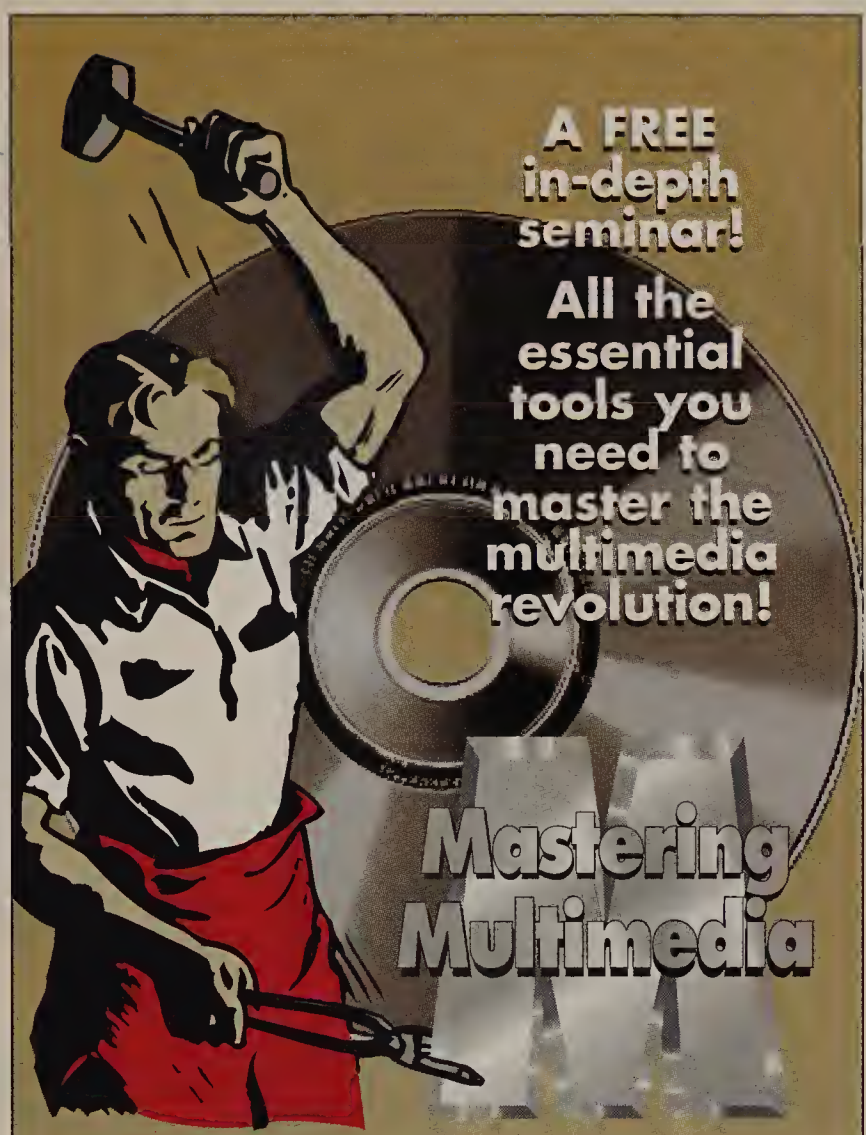
LABEL-PRINTING TIPS

- **ImageWriter II** When using fanfold label stock, never wind the paper-feed knob backward. A label may peel off inside the printer and stick to internal components. Also, with most fanfold label stocks it isn't necessary to start printing at the top of a page because the distance between labels doesn't change where the stock crosses a page boundary.
- **StyleWriter and StyleWriter II** Apple's ink-jet printers can feed label stocks directly from their paper trays. Because label stock is thicker than paper, however, slide both paper-thickness adjustment levers to the envelope position. (One lever is next to the sheet feeder, and the other is inside the printer, just above the ink cartridge.) When manually feeding labels into an original StyleWriter, use the rear manual-feed slot.
- **Laser printers** Some laser printers, including Apple's LaserWriter II line, can feed label stock directly from their paper trays, which eliminates the need to hand-feed labels. Other laser printers put the stock through too many twists and turns. Double-check with the printer manufacturer before buying if you plan to make labels.
- **Plan ahead** Print a page of labels on plain paper. Superimpose it over a sheet of label stock and hold them up to a bright light to check the positioning and alignment of each label.

(sometimes called continuous-feed or pin-feed stock) to run thousands of labels without reloading the printer. Fanfold label stock is available in most office- and computer-supply stores, and Lyben Computer Systems (810/268-8100) is a good mail-order source, with a variety of sizes, colors, and quantities (up to 20,000 per box). Lyben is also a good source for laser and ink-jet label stocks, not to mention specialty papers and envelopes. m

Next month: StyleWriter Tips and Secrets

Contributing editor JIM HEID is the author and producer of *Macworld Complete Mac Handbook Plus Interactive CD*, the third edition of which was recently published by IDG Books Worldwide.



EXAMPLES ■ DEMOS
FREE GIVEAWAYS & PRIZES
TOOLS ■ TECHNIQUES
REAL EXPERIENCES OF REAL DEVELOPERS ■ THE HOTTEST TECHNOLOGIES

Learn the secrets of multimedia from the Masters!

- Producers
- Enthusiasts
- Audio Visual pros
- Art Directors
- Graphic Designers
- Writers
- Publishers

If you do multimedia – or you want to – make your reservation *TODAY.*

Fascinating, fact-packed sessions covering

- Imaging technology
- Video
- Audio
- Authoring
- CD-ROM Production
- Publishing

"Smooth presentation – clean and precise"
— Charles Bush, Coca-Cola USA

Free Seminars

Los Angeles, Boston, Seattle, Atlanta, San Francisco, Chicago, New York, Dallas

Sessions cover Macintosh & PC

Call for dates & locations nearest you

Limited Reservations Available

Call Toll-Free 800-55-GRAFX

in California call 714-953-7013

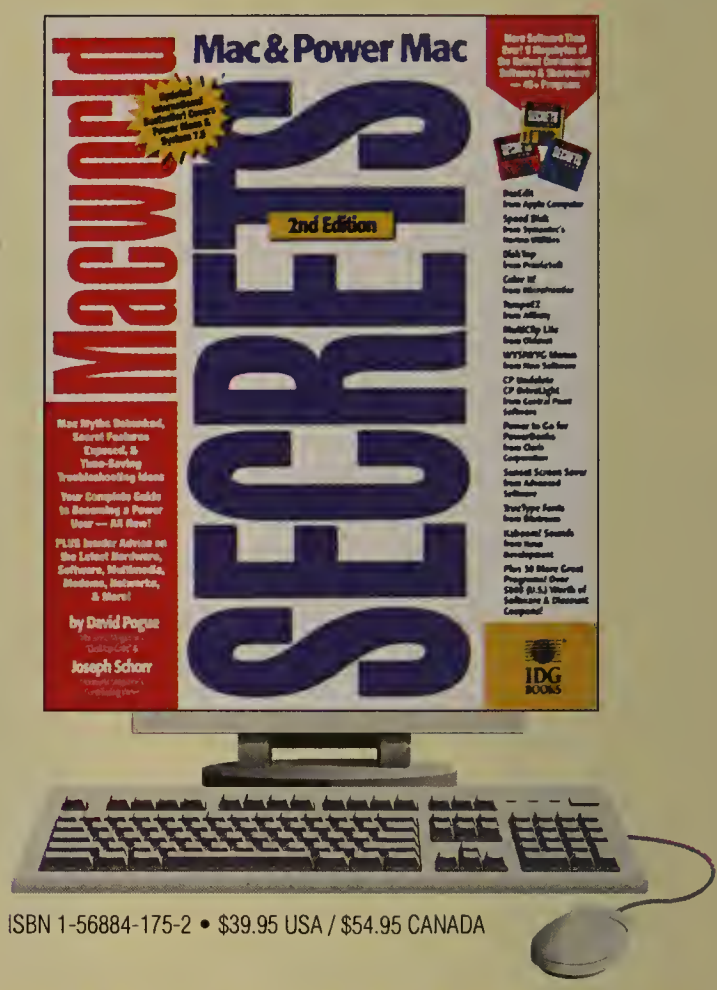
Produced & Delivered by Graphix Zone

FREE... But please don't delay. Call now to reserve your seat!

Lifesaving Computer Books for Beginners to Experts

The First (and only) Computer Books Built Like a Macintosh.

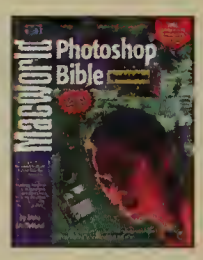
ISBN 1-56884-192-2 • $39.95 USA / $54.95 CANADA



ISBN 1-56884-175-2 • $39.95 USA / $54.95 CANADA

POWERFUL • EASY • FUN • GREAT VALUE

If you like *Macworld* magazine… you'll LOVE Macworld Press books! They're authored by many of the same writers and columnists you've come to trust every month. Learn more about your MAC the fun & easy way with helpful guides from the Macworld Press division of IDG Books!

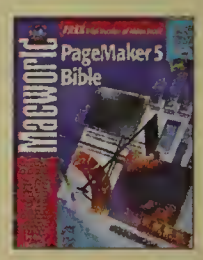


Macworld Photoshop 3 Bible, 2nd Ed.
1-56884-158-2
$39.95 USA
$54.95 Canada

Macworld QuarkXPress 3.2/3.3 Bible
1-878058-85-1
$39.95 USA
$52.95 Canada

Macworld Illustrator 5.0/5.5 Bible
1-56884-097-7
$39.95 USA
$54.95 Canada

Macworld Freehand 4 Bible
1-56884-170-1
$29.95 USA
$39.95 Canada



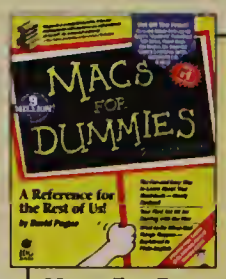
Macworld PageMaker 5 Bible
1-878058-84-3
$39.95 USA
$52.95 Canada

Macworld ClarisWorks 2.0/2.1 Companion
1-56884-180-9
$24.95 USA
$34.95 Canada

Buy 2 Books – Get a FREE disk!

FREE MAC SUPER-DISK

Order any 2 books and you'll get FREE— David Pogue's new disk of software, shareware & utilities for your MAC.



Great Beginner Books Starting at $19.95!

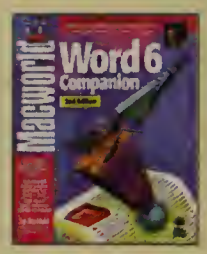
Macs For Dummies, 2nd Ed.
1-56884-051-9
$19.95 USA/$26.95 Canada

CALL US FOR MORE MAC TITLES!

- MORE Macs For Dummies
- The Internet For Macs For Dummies
- Mac Programming For Dummies
- Upgrading and Fixing Macs For Dummies
- PageMaker 5 For Macs For Dummies
- Word 6 For Macs For Dummies

Macworld System 7.5 Bible, 3rd Ed.
1-56884-098-5
$29.95 USA
$39.95 Canada

Macworld FileMaker Pro 2.1 Bible
1-56884-201-5
$34.95 USA
$46.95 Canada



Macworld Word 6 Companion, 2nd Ed.
1-56884-082-9
$24.95 USA
$34.95 Canada

Macworld Excel 5 Companion, 2nd Ed.
1-56884-081-0
$24.95 USA
$34.95 Canada

30 Day No Risk GUARANTEE!

Try any of these books at absolutely no risk. If they don't help you use your computer better, return it for a full refund.

CODE MWMAN

ORDER RISK FREE!

1-800-762-2974

Or call us for a free consumer catalog. Over 150 Computer Titles In Stock! In Canada, Call 800-667-1115

Macworld PRESS

IDG BOOKS

BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

SYSTEM 7.5'S MENU-BAR CLOCK, WHICH you set with the Date & Time control panel, has a couple of tricks you may not have discovered. For example, you can temporarily hide the clock by holding down the option key and clicking the clock. Option-click the same spot again to reveal the clock. In addition, you can put a PowerBook to sleep quickly by pressing the control key while clicking the battery indicator in the menu bar.

Otto P. Kamsteeg of Almere-Stad, The Netherlands, incited me to investigate these System 7.5 tricks when he reported the control-click trick for SuperClock, the free system extension (available from user groups and online information services) on which System 7.5's clock is based. Both control-click and option-click work with SuperClock and are described in its documentation.

Modems on Digital Phone Lines

Q. We want to get a fax modem, but we've been warned that our phone lines are powered. Must we add an unpowered phone line, or is there a device that would protect the fax modem?

Terence Curtis
San Jose, California

A. There are two types of telephone lines: old-fashioned analog and newfangled digital. Most modems and fax modems are analog devices and don't work with digital phone lines, which carry voltage and current levels that can damage an analog modem.

You are more likely to have digital phone lines at work or in a hotel—places where digital PBX machines are becoming common—than at home. It can be hard to tell by casual inspection which type of line you have. If in doubt, ask a phone company representative or other person who coordinates installation and service of your phone. Find out whether you can plug a phone from home or an ordinary fax machine into the line you want to use for your modem. If you can, the line is probably analog.

To use an analog modem on a digital line, you need an adapter such as the GlobalSwitch from Global Village Communication (415/390-8379, 800/736-4821). This adapter lets you connect the modem to the phone line at the handset jack—which is sure to be digital—instead of from the wall jack. You can still use the phone for voice calls.

Gamma Correction

Q. I stumbled onto a smiley face in the Monitors control panel by pressing the option key. Then I double-clicked the smiley and got a dialog box containing gamma options (see "Hidden Monitor Options"). What does this mean, and how should I set these options?

Shon Taylor
Salt Lake City, Utah

A. The intensity of color on a video display does not correspond uniformly to the intensity of the electron beam that traces the picture on the video display tube's phosphor coating. Therefore, the computer's video circuitry compensates to provide the most accurate color. This compensation is commonly called *gamma correction*. The built-in video circuitry of color Macs and Apple video cards provides gamma correction for the phosphor composition of Apple's original 13-inch RGB display (the de facto standard for Mac monitors). In addition, the built-in video on some Macs offers alternative gamma-correction methods for users who prefer nonstandard color correction, perhaps to simulate different degrees of paper whiteness. You select one of the available gamma-correction methods in the dialog box you discovered. Changing the gamma correction has no effect on video performance, only on color balance.

If a particular model of monitor has a nonstandard phosphor composition, the manufacturer can provide a gamma-correction method specifically for that monitor and can also offer alternative methods for users who prefer nonstandard color correction. The monitor maker supplies its gamma-correction methods in a monitors extension or in a special control panel that goes in your Control Panels folder; the Mac Operating System automatically installs the alternative methods as options in the Monitors control panel.

Incidentally, the smiling Mac icon designates the start-up monitor on a sys-

continues

Maximum AV Color Depth

		660AV OR 840AV 1MB OF VRAM		840AV 2MB OF VRAM		POWER MAC AV 2MB OF VRAM	
Color Monitor Type	Screen size (horiz. × vert.)	Mac Graphics Only	Graphics and Live Video	Mac Graphics Only	Graphics and Live Video	Mac Graphics Only	Graphics and Live Video
NTSC	512 × 384	32 bpp	8 bpp	32 bpp	8 bpp	32 bpp	16 bpp
Mac 13", 14", 15", 17", 20"; VGA and SVGA; NTSC	640 × 480	16 bpp	8 bpp	32 bpp	8 bpp	32 bpp	16 bpp
SVGA	800 × 600	16 bpp	8 bpp	32 bpp	8 bpp	32 bpp	16 bpp
Mac 15", 16", 17", 20"	832 × 624	16 bpp	8 bpp	32 bpp	8 bpp	32 bpp	16 bpp
Mac 17", 19", 20"; SVGA	1024 × 768	8 bpp	4 bpp	16 bpp	8 bpp	16 bpp	8 bpp
Mac 20" and 21"	1152 × 870	8 bpp	4 bpp	16 bpp	8 bpp	16 bpp	8 bpp
NTSC flicker-free	640 × 480	NA	8 bpp	NA	8 bpp	NA	8 bpp
NTSC flicker-free	512 × 384	NA	8 bpp	NA.	8 bpp	NA	8 bpp

bpp = bits per pixel; NA = not applicable.

The maximum number of colors you can set on an AV Mac depends on the screen size, the amount of VRAM installed, and whether you're using the VRAM for Mac graphics only or for both graphics and live-video input or output. The number of colors is listed here in bits per pixel; 4 bpp yields 16 colors, 8 bpp yields 256 colors, 16 bpp yields thousands of colors, and 32 bpp yields millions of colors. Some monitors can be set to smaller-than-standard screen sizes and more colors by clicking the Options button in the Monitors control panel.

tem with multiple monitors, and as with the miniature menu bar, you can drag the tiny icon to any monitor depicted in the Monitors control panel.

AV Color Depths

Q I'm making QuickTime movies from VCR tapes with my 660AV Mac and AV monitor. But when I set my monitor to 32,000 colors, I can't record or play back the movies, even if the movie window is small. Must I put up with 256 colors or buy a 24-bit color-graphics card to get better images?

Kazuhiro Yago
Ann Arbor, Michigan

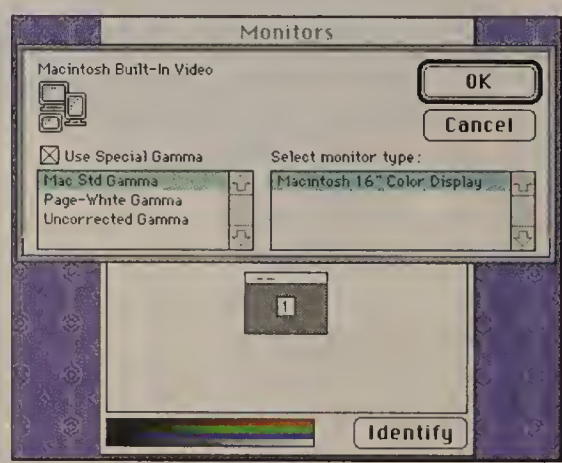
A Sorry, but 256 colors is the best a 660AV or 840AV can do on any monitor while you're using the video-input port, although the Power Mac AV models can do better on many monitors (see the table, "Maximum AV Color Depth"). When you record a QuickTime movie or display live video in a window, all the AV Macs split their video RAM (VRAM) fifty-fifty between graphics (the standard Mac display) and video-input. If the video-input port is inactive, all the VRAM is available for graphics, and with many monitor sizes you can set a higher color depth in the Monitors control panel.

Next Slide Ready

TIP When you present a slide show on screen, Microsoft PowerPoint 3.0 prepares the next slide in the background to facilitate a fast, smooth transition from the current slide. However, your verbal transition is hard to coordinate with the slide because PowerPoint gives no indication when the next slide is ready. If you try to advance the slide too soon, nothing happens. As soon as the next slide is ready, PowerPoint displays it, but you have briefly lost control of the timing of your presentation.

Connectix PowerBook Utilities (CPU) to the rescue! The CPU indicators (battery condition, caps lock status, and so forth) tell you when the next slide is ready. They disappear from the upper-left corner of the screen while PowerPoint processes the next slide, and they reappear when the next slide is ready. For presentations, you can create a special CPU configuration set that shows only one indicator, and then switch back to your regular configuration when the presentation is over. For desktop Macs, Connectix Desktop Utilities (CDU) offers the same benefits. For more information on CPU or CDU, contact Connectix at 415/571-5100 or 800/950-5880.

Bernard L. Gutnick
Santa Clara, California



Hidden Monitor Options Holding down the option key while double-clicking a monitor depicted in the Monitors control panel brings up a dialog box from which you can select a gamma-correction method for that monitor. You can also access special options by option-clicking the Options button.

This tip requires CPU verson 2.03 or later. In addition, the master switch in CPU's Display panel must be turned on even if all options in the Display panel are turned off. In the Indicators panel, the Graphic Battery option must be turned on. Also, the PowerBook's AC adapter must be plugged in.—L.P.

Fonts Put Away Wrong

TIP You can disable a font by dragging it out of the Fonts folder (with System 7.1 and later), but you can't use the Finder's Put Away command to restore it easily. The Put Away command does put fonts dragged to the desktop back into the Fonts folder, but programs you open thereafter don't have access to the fonts you put away. To restore fonts so that subsequently opened applications can use them, you must drag the fonts to the Fonts folder or the System Folder icon (not the System Folder window).

Elios Azzone
Milan, Italy

Removing RAM Doubler Message

TIP My only complaint about Connectix's RAM Doubler is that at start-up it displays the message "Connectix RAM Doubler installed" under the "Welcome to Macintosh" message. You can replace that little phrase with one of your own, or with none at all. Begin by making a backup copy of the RAM Doubler extension, which you can do by option-dragging the original from the Extensions folder to the Startup Disk icon. Then use Apple's ResEdit utility to open the original RAM Doubler, and in the list of resource types that appears, double-click the DSAT type. Open the only DSAT resource, ID =4064, to see its contents. Then find the message on the

continues

Anderson & Lembke, Inc.

FIRST WE CHALLENGED THE COMPETITION. THEN WE CHALLENGED OURSELVES.

Presenting the new Agfa Arcus II.

With all the praise the Arcus family has won, you'd think we'd rest on our laurels. Think again. The Agfa Arcus II is a completely new, 600 x 1200 ppi, 36-bit color scanner with an integrated transparency module. It's also designed to be the best machine you can put on your desktop.

Compared to other "desktop" scanners, the new Arcus II can capture more highlights and shadows, thanks to its 3.0 dynamic range. That's the kind of image quality you used to have to send out for. Plus, no other top-of-the-line "desktop" scanner comes with Agfa FotoLook scanning software, Agfa FotoTune color management software, and full Adobe Photoshop™ software built in.

And no one else can offer you our new, 42-page *Introduction to Digital Scanning*, which takes you step by step through a variety of scanning situations.

Truth is, with everything we added to the Arcus II, we're expecting some more awards. But the real prize winner will still be you. Call 1-800-685-4271 to find out more information on Agfa's new scanners.

AGFA Agfa
The complete picture.

SEE US AT SEYBOLD BOOTH #1201

AGFA and the Agfa rhombus are registered trademarks. Photoshop is a trademark of Adobe Systems Incorporated, which may be registered in some jurisdictions.

Circle 43 on reader service card

Ask for New "KPT Bryce"!
Five Stars, Macworld UK!

Accelerated for Power Macintosh

"The Envelope, Please!"

© A.M.P.A.S. ®

"And the winner is... Kai's Power Tools™ 2.1!"

★★★★★ Publish March 1994
MACWORLD MW ★★★★★ MAY 1994
MacWEEK NOVEMBER 1993 ♦♦♦♦♦
RATED NewMedia MAGAZINE AWESOME APRIL 1994

C. David Piño uses KPT to create stunning graphics for television's biggest award spectaculars.

In-demand digital artisans like C. David Piño—best known for creating unforgettable titles for the Academy Awards, Emmy Awards and Miss America telecasts—know how indispensable the five-star Kai's Power Tools is to their stock and trade. "The challenge in doing a show like the Academy Awards is to create a set of graphics that work together," Piño says. "With KPT's Gradient Designer, I created hundreds of graphics featuring letterform surfaces and beveled edges that looked as if they had all been formed from the same block of gold."

Your Complete Imaging Solution

Kai's Power Tools delivers the production tools to create imaging with flair! Watch your creativity skyrocket with more than 30 fantastic extensions and filters that plug into Photoshop, Pointer, Pixel Point Pro and more!

Best of all, KPT is a complete, standalone solution, because it includes Color-It!, the 32-bit paint and imaging program — a $149 value FREE!

Whether you're a Hollywood pro or a rising star, Kai's Power Tools 2.1 will move you to higher levels of creative expression.

Ask for Kai's Power Tools 2.1 at:

Computerworld 800.326.0092
COMPUSA 800.COMPUSA
Computer City 800.843.2489
Egghead Software 800.344.4323
Electronic Boutique 800.800.0032

Own KPT 1.0? Upgrade Today!
Call 1.800.472.9025

HSC Software, 1661 Lincoln Blvd. Suite 101, Santa Monica, CA 90404. Phone: 310.392-8441. Fax: 310.392.6015.

©1994 HSC Software Corp. HSC is a registered trademark and Kai's Power Tools is a trademark of HSC Software Corp. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Used under license. All other product names are trademarks of their respective owners.

Circle 5 on reader service card

right side of the resource-editing window, select it, and type a replacement (see "RAM Doubler Start-up"). Save your changes and restart the Mac to view your handiwork.

Sam Wong
Ames, Iowa

ResEdit is available from user groups, online services, and APDA (800/282-2732; 800/637-0029 in Canada; 716/871-6555 for other countries). It also comes with the book *ResEdit All-Night Diner* by Dave Ciskowski (1993, Hayden Books; 317/581-3500, 800/428-5331).—L.P.

E-Mail Interchange Update

You can exchange E-mail between various commercial online services through the Internet, but the table of sample addresses in September's *Quick Tips* contains a couple of errors. Howard Corneli of Salt Lake City says you should use an address of the form >INTERNET:cheetah@aol.com to send mail from CompuServe to America Online. Stanley Wong of San Francisco says jane@eworld.com is the correct type of address for sending E-mail to Newton Mail (which is part of eWorld).

Update on Forcing Order Invisibly

After pasting blank lines at the beginning of folder names to make the folders appear first alphabetically (as suggested by a tip in August's *Quick Tips*), Ken Pishna of Sheridan, Colorado, encountered problems printing in QuarkXPress and Aldus PageMaker. If he printed a document containing graphics that were placed in a folder whose name included a blank line (not a blank space), he got an "undefined PostScript" error. After he removed the blank line from the folder name, the same documents with no alterations printed flawlessly. If you encounter problems after pasting blank lines at the beginning of file or folder names, replace the blank lines with blank spaces.

Update on Word Tables in PageMaker

The method described in August's *Quick Tips* for getting a table from Microsoft Word into Aldus PageMaker (by using the LaserWriter 8 printer driver to save the table as an EPS graphic) is hardly the easiest method, says Elizabeth C. Klisiewicz of Westborough, Massachusetts. She uses Microsoft's OLE (Object Linking and Embedding) technology to embed the table in a PageMaker document as follows:

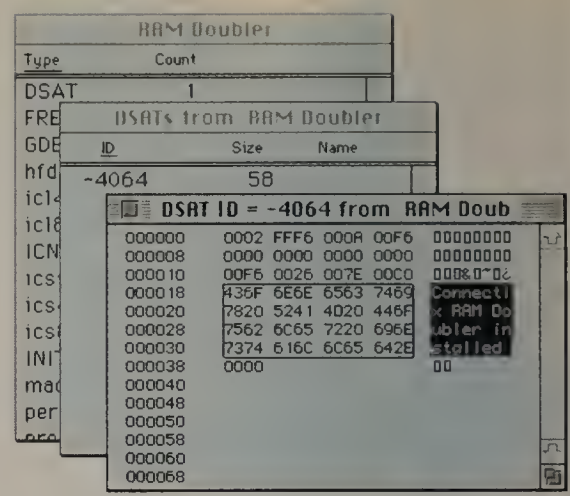
1. After creating your table in Word, select the entire table (or any part of it) and use the Copy command to put it on the Clipboard.

2. Switch to PageMaker and choose Insert Object from the Edit menu. The Insert Object dialog box lists all the types of OLE-compatible documents on your computer.

3. Select Word Document and click OK to bring up an OLE window in Word. Paste the table you copied in step 1 into this window. Close the OLE window and switch back to PageMaker, where you'll find the table already placed in your document.

4. You can manipulate the embedded table like any graphic in PageMaker. Double-clicking the table in PageMaker brings up the OLE window in Word. There you can edit the text and formatting of the table.

If you plan to use the table in more than one place, use OLE to link the original Word document with the PageMaker document instead of embedding a copy of the table. To link the original table, use PageMaker's Paste Link or Paste Special commands instead of Insert Object as documented in the PageMaker user manual. You can't use System 7's publish and subscribe feature instead of OLE, because the table ends up as unformatted text in PageMaker. When you upgrade to System 7.5, you may have to reinstall PageMaker 5.0 to make it work with OLE. OLE won't work with the native Power Mac version of PageMaker 5.0. m



RAM Doubler Start-up The message that RAM Doubler displays during start-up is stored in DSAT resource ID –4064, which you can modify with ResEdit as shown here.

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld*. Due to the high volume of mail received, we're unable to provide personal responses.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld System 7.5 Bible* (IDG Books Worldwide, 1994).

Do You Make These Six Common Mistakes On Your Taxes?

common mistakes can cause you big daches on your taxes. An oversight here, mission there. From unnecessary tax ments to full blown IRS audits—you can up paying too much ... or worse. But , using MacInTax and Macintosh®, you avoid these simple but costly mistakes:

The Arithmetic Error
Today, even the simplest forms contain complex calculations. And all the late-night scrambling, an cent mistake could cost you plenty.

The Transcription Error
With all those numbers being juggled from schedule to schedule, no wonder the figures are so often scribed incorrectly or entered on the ng line.

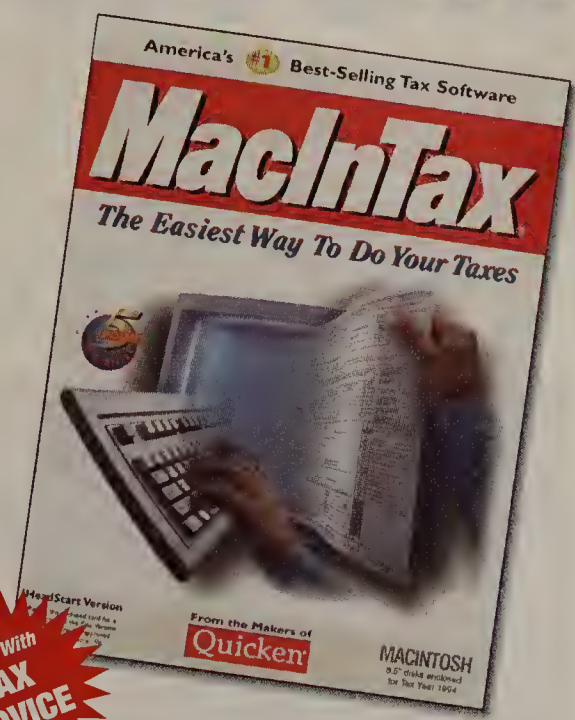
The Omitted Form
Even "ordinary" returns require anywhere from six to a dozen forms omplete. It's easy to miss one or end up ing all over town to find the one you need.

The Misinterpreted Instruction
At best, IRS instructions can be h to understand. At worst they can be d-boggling. What you need are clear ctions in plain English.

The Overlooked Deduction
You'd have to be a professional tax preparer to know all the deductions re entitled to. If you miss just one, it ld cost you hundreds of dollars.

The Exceeded Guideline
The fastest way to trigger an IRS audit is to exceed the "normal" e on one of your deductions. You need now what the IRS looks for on a line-by- basis.

When you do your taxes with MacInTax, takes like these are virtually impossible. filing your taxes couldn't be easier.



Now With TAX ADVICE

America's #1 Tax Software

The fastest, easiest way to do your taxes right. With a new Macintosh interface and enhanced capabilities for 1994, America's #1-selling tax software for the Mac, now makes preparing your income taxes easier than ever. Just gather your records and receipts, sit down at your computer and let MacInTax's award-winning EasyStep® tax preparation system guide you through every step of the way. Then print out your forms, sign them and drop them in the mail. It's that easy!

New "smart features" save time and ensure accuracy. Our TaxAdvisor™ points out overlooked deductions and mistakes on the fly—while you're entering your data into our Macintosh software—to improve the accuracy of your return. And the SmartAudit™ feature hunts down errors, omissions and likely audit items ... and takes you directly to each item and tells you what to change and how. All in a fraction of the time you'd spend checking and revising your return manually.

More returns filed and more awards won than any other tax software. Over 40 million returns have been filed using MacInTax and TurboTax, making it the nation's most trusted tax preparation program. So order today. And see for yourself why the new MacInTax is easily the best tax software ever!

Includes 2 Free Bonus Gifts!

Tetris. Rotate and flip moving pieces to fit as the squares descend from the top of the screen. Make the pieces fit precisely with the others to form a complete row with no blank spaces. The quicker you position each piece, the higher your score!

Money Tax Strategies Guide. This helpful book contains over 100 pages of money-saving tax strategies, from renowned tax authority Mary L. Sprouse and the experts at *Money* magazine.

☐ Yes, I'll try MacInTax FREE!

Intuit

Rush me my FREE gifts and FREE TRIAL copy of MacInTax as soon as they're available (usually late October). If I'm not 100% satisfied, I'll return MacInTax within 30 days and owe nothing. If I decide to keep it, my credit card won't be charged until after my 30-day Free Trial. Either way, my FREE gifts are mine to keep, whatever I decide.

Name _____

Address _____

City _____ State _____ Zip _____

Bill My: ❑ Visa ❑ MasterCard ❑ Discover ❑ Amex

I understand that there is an additional $7.00 shipping per order.

Card # _____ Exp. Date _____

Signature _____

Please Choose:

❑ 3-1/2" disks, or ❑ High Density, or
❑ 5-1/4" disks ❑ Low Density

❑ MacInTax (for Macintosh®) $39.95
❑ TurboTax (IBM®-compatible) $39.95
❑ TurboTax for Windows™ $39.95
❑ TurboTax for Windows - CD ROM $39.95

Mail your order to: Intuit, 2650 E. Elvira Rd., #100, P.O. Box 28815, Tucson, AZ 85775-26112. Or Call NOW:

800-964-1040
ext. 42409

MacInTax requires Macintosh Plus, System 6.0.5 or higher, hard drive. TurboTax requires IBM PC, XT, AT, PS/1, PS/2 or compatible, DOS 3.0 or higher, 640K RAM, hard drive. TurboTax for Windows requires Windows 3.1 or higher, 4 MB RAM, hard drive. CD-ROM minimum requirements are Windows 3.1 or higher, 256 color-capable VGA monitor, double speed CD-ROM drive, and sound card. Offer expires 4/15/95, not valid with any other offer. ®TurboTax, MacInTax, EasyStep and Quicken are registered trademarks of Intuit. Other trademarks are the sole property of their respective owners. *Residents of AZ, AR, CA, CT, FL, IL, MA, MI, MN, NJ, NM, NV, PA, TX, UT, VA, WA please add applicable sales tax. Please add $7.00 shipping and handling per order. For retail purchases, attach a copy of sales receipt and enclose $7.00 U.S. for shipping and handling. (Check or money order payable to Intuit.) Send to: Intuit, Tetris Offer, 2650 E. Elvira Road, #100, P.O. Box 28815, Tucson, AZ 85775-2612. All prices are U.S. dollars. NOTE: Customer is responsible for return shipping charges.

EDITED BY ELIZABETH DOUGHERTY

Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

Microsoft Switches to Windows NT–Based Mail Server

REDESIGNED AND RENAMED, THE successor to the Microsoft Mail server will offer many improvements—as long as you have a Windows NT–based computer to run it. Called Microsoft Exchange Server, the new software will merge mail-server and groupware-communications–server functions into a single product to provide a universal in-box for different types of messages, including E-mail, faxes, voice mail, and data from online services. The same in-box will handle forms, schedules, and other information exchanged by Microsoft, third-party commercial, or custom groupware applications. In fact, Microsoft Exchange Server will come with forms and scheduling applications.

DAVID KAHL

The new client/server package, which won't ship until 1995, will let users format messages with rich text styles and embed OLE links, so you'll be able to drag an Excel chart into a message and edit it there, for example. Microsoft Exchange Server combined with Windows NT will let network administrators manage mail directories and monitor mail traffic and server status. (Windows NT is an operating system targeted at network applications, not to be confused with the ubiquitous Windows desktop system.)

Microsoft plans to continue to support—but not upgrade—the existing AppleTalk- and PC-server software for MS Mail. The company will keep upgrading the MS Mail client software for NetWare networks and for Macintosh, MS-DOS, Microsoft Windows, and Unix-based systems. Microsoft Exchange Server will require a PC running Windows NT Advanced Server (NTAS) version 3.5 (code-named Daytona), which was scheduled to ship in September. A pilot version of Windows NTAS Microsoft Exchange Server is due at the end of 1994, with a final release to follow once the pilot has been thoroughly field-tested and debugged. According to Microsoft, MS Mail Server customers will be able to upgrade to Microsoft Exchange Server without losing messages or applications based on MS Mail.

Customers who don't want to go the Windows NT route can consider forthcoming, unnamed migration tools from Apple—due in the first quarter of 1995—that will convert MS Mail messages and directories to a form compatible with PowerShare, Apple's communications server software. (PowerShare works with third-party mail clients and with the Apple PowerTalk clients that come with System 7 Pro and System 7.5.)

Customers who already have servers running Windows NT will probably not consider Microsoft's strategy an obstacle. Administrators of Mac-only E-mail systems are those most likely to switch E-mail brands, but they're not the only MS Mail customers who have taken advantage of CE Software's competitive upgrade to QuickMail.

MS Mail customer Rich Foster, who administers a NetWare network of 35 Macs and 200 PCs at TL Enterprises in Camarillo, California, said, "I'm very disappointed with the direction Microsoft is going." Already busy managing a varied electronic publishing shop, Foster doesn't like the idea of supporting yet another operating system (Windows NT), and he thinks Microsoft's move will limit rather than expand his options. Foster is trying QuickMail for now, while watching technology developments.

Apple Computer, 408/996-1010; CE Software, 515/221-1801; Microsoft Corporation, 206/882-8080.—NANCY E. DUNN

TCP/Connect II Improves E-mail

VERSION 2.0 OF TCP/CONNECT II, InterCon's net-surfin' software, sports a face-lift and a raft of mail and file-transfer improvements. This terminal-emulation software also now includes PPP, Gopher, and PowerMac support.

The E-mail component supports MIME and makes message handling easier. For example, the software can filter and sort incoming messages by multiple user-designated criteria, including sender and subject. Users can display MIME enclosures directly from an E-mail document—no separate downloading or decoding is necessary.

The revamped FTP software supports multiple connections. It lets users preview files before downloading them and automatically decodes several file types, including unstuffing a file if Aladdin's StuffIt engine is installed. TCP/Connect II costs $495. InterCon Systems, 703/709-5500.—CAMERON CROTTY

Blackbirds Make Analyzers Sing

THE BUILT-IN ETHERNET CAPABILITIES and 68040 processors of the 500-series PowerBooks make them an ideal choice for a network-protocol analyzer. The PowerBooks' design changes drastically increase performance over previous models, which were slowed by their external SCSI-to-Ethernet adapters. The AG Group reports that while a PowerBook 140 running the company's EtherPeek software captured all Ethernet frames at a 25 percent load, a 500-series PowerBook can handle an 82 percent load. In Neon Software's tests, a beta version of its NetMinder Ethernet software running on a 25MHz PowerBook 520 collected all packets at up to a 75 percent load.

Both Neon and the AG Group are updating their programs for the PowerBook 500 models. The AG Group offers a free EtherPeek upgrade via the Internet, CompuServe, AppleLink, or ARA. Neon's NetMinder Ethernet version 3.2 is available via eWorld, AppleLink, ARA, and the Internet. The AG Group, 510/937-7900; Neon Software, 510/283-9771.—JOEL SNYDER

ROBERT PERRY

The PowerBook 540c offers roving network managers a fast, lightweight platform for protocol analyzers like The AG Group's EtherPeek.

Sonic Systems Supports SNMP

SONIC SYSTEMS' FALL ETHERNET lineup features a stackable 16-port hub and a switch that support SNMP.

With the IntelliStack 16 hub, a customer can combine a base hub with up to five expansion hubs to create a single logical hub with 80 ports. Network administrators can use the IntelliStack's SNMP software to manage the hub and other SNMP-manageable network devices from a Macintosh, or use another vendor's SNMP-management system to manage the hub. The IntelliStack 16 ships with 10BaseT support; 10Base2 and FDDI are optional. The base hub carries a modest price of $80 per port; the expansion hub's per-port price is $60.

The EtherSwitch ($2499), an Ethernet switch, has five 10BaseT ports that can support a maximum network throughput of 20 Mbps over two simultaneous 10-Mbps connections. Both the switch and the hub are expected to ship in September. Sonic Systems, 408/736-1900.—MARTHA STRIZICH

Lotus Mail Moves Closer to Notes

LOTUS DEVELOPMENT RECENTLY acquired SoftSwitch, a company that made its name with products that make it possible for everyone in a large enterprise network to exchange electronic mail, despite dissimilar mail systems. Lotus eventually plans to incorporate SoftSwitch technology in its LAN-based products. But initially, Lotus's new messaging server software, called Lotus Communication Server (LCS), won't include SoftSwitch elements.

Due in 1995, LCS—essentially a combined Notes server and cc:Mail post office—will bring Lotus Notes and cc:Mail closer together. Both products will use LCS as their messaging server, and Notes will incorporate cc:Mail to handle E-mail exchange. A new cc:Mail Client/Server Edition will make it easy to add cc:Mail for users who don't need Notes. LCS will support cc:Mail post offices that will work with versions of the familiar file-sharing clients enhanced to include the LCS message transport. In addition, LCS will support native X.400 and SMTP/MIME transports and native X.500 directories. LCS will be available in Unix, Windows NT, OS/2, DOS, and NetWare Loadable Module versions.

The forthcoming LCS Mac client, due in the first quarter of 1995, will include the ability to filter incoming mail and search for messages with Boolean operators. Prices for LCS and the new clients were not set at press time. Lotus Development Corporation, 800/448-2500.—MARTHA STRIZICH

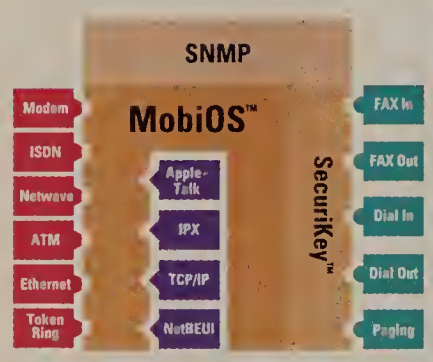
IN BRIEF

■ **ARA Users Get TCP/IP** A TCP/IP software gateway from Apple Computer allows Apple Remote Access (ARA) and LocalTalk users to access a TCP/IP network. Previously, ARA clients could not take advantage of TCP/IP services such as Internet access. The Apple IP Gateway ($249), which translates between AppleTalk and TCP/IP, is scheduled to ship September 15. Owners of ARA MultiPort Server 2.01, ARA Personal Server 2.01, and Apple Internet Router 3.01 can purchase the gateway for $69. The client must have MacTCP. 408/862-3385.

■ **Faster File Transfer** RUN's RunShare system extension accelerates Ethernet file transfers fourfold, according to the company, through proprietary technology. This version, due in August, supports drag-and-drop copying. RunShare costs $399 for 2 users, $749 for 5 users, and $2499 for 25 users. A LocalTalk-only edition is $199 for 6 users. 408/353-8423.

◀ **Software Wave** PowerPC-compatible FileWave 2.0 from Wave Research automates software distribution over a network. It costs $895 for a server and 20 workstations. 510/704-3900.

After This, You'll Think Of Remote Access Servers In One Of Two Ways.



DaynaLINK for ARA is a mobile networking platform built on Dayna's multi-tasking MobiOS operating system, allowing all industry protocols and services to be added with PCMCIA-based software modules. Each module can be independently managed via SNMP, and SecuriKey security software lets you control access to available services.

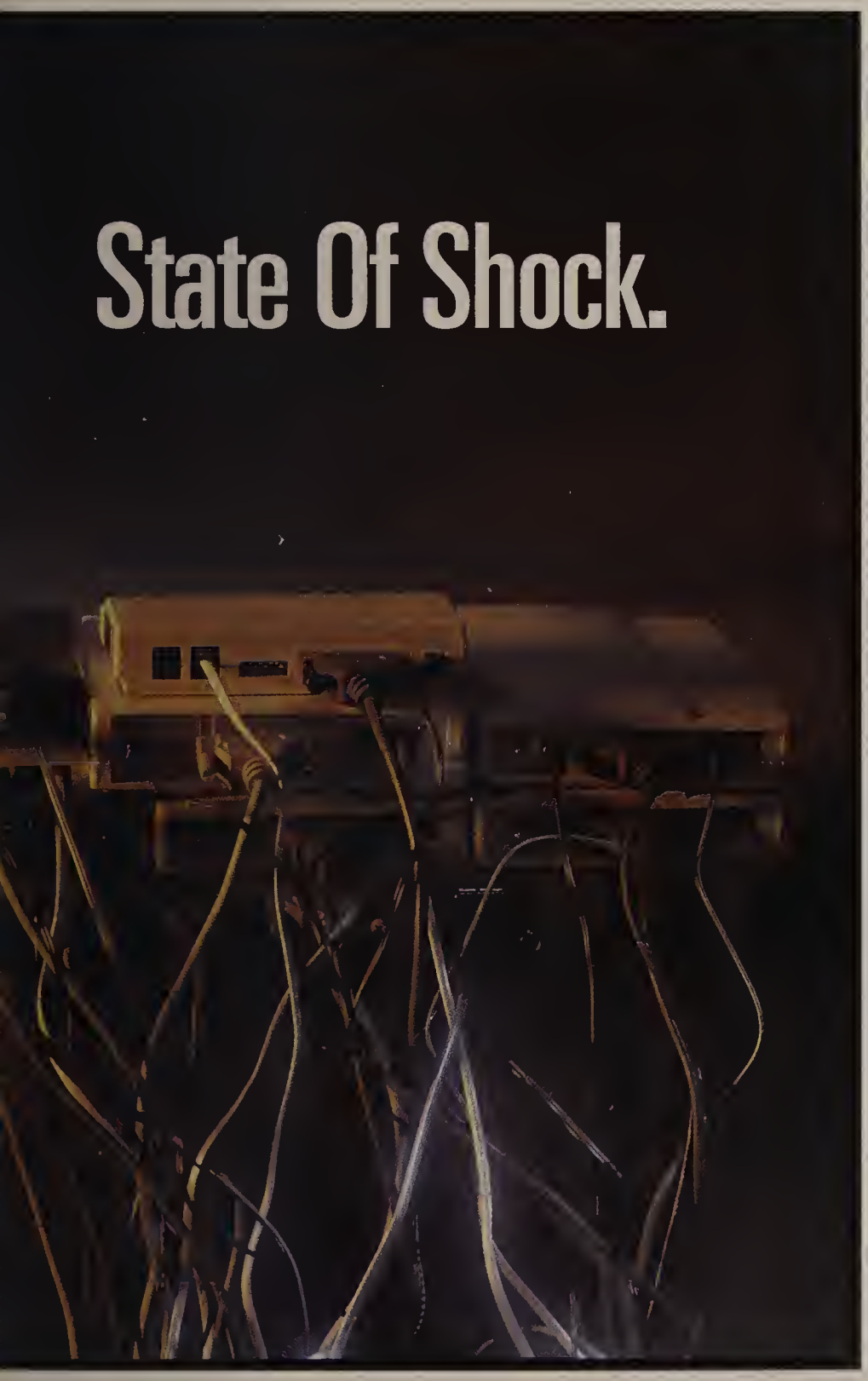
No Boundaries
NO LIMITS

DAYNALINK'S ADVANTAGES: *PCMCIA Type II and Type III compatibility, hot swappable data links, high performance RISC-based processing, trouble-shooting light panel and Dayna's Two-Year Warranty and 24-Hour Replacement Program.*

DaynaLINK, MobiOS, SecuriKey and No Boundaries, No Limits are trademarks of Dayna Communications, Inc. All other product names are the trademarks of their respective holders. ©1994 Dayna Communications, Inc., Sorenson Research Park, 849 West Levoy Drive, Salt Lake City, UT 84123

Introducing DaynaLINK™.
The First PCMCIA-Based Mobile Access Server.

A remote access server that uses PCMCIA technology is a pretty startling innovation. Especially when you realize it helps you avoid the rat's nest of cords that come with external modem servers. Not to mention the inflexibility of those with proprietary internal modems.



But if you think simplifying dial-in remote access is all there is to DaynaLINK for ARA, you're in for a bigger surprise. This patented technological breakthrough utilizes the multi-tasking MobiOS™ operating system, which will soon let you add such protocols as TCP/IP, IPX and NetBEUI, as well as services like dial out, fax in, fax out, paging, and both local and wide area wireless access. All as easily as popping in a PCMCIA card.

Which is precisely why we call DaynaLINK a Mobile Access Server. Any remote access server can give you dial-up network access once your mobile users finally find a place to connect. But only DaynaLINK is designed to cover you down the road by supporting cordless and cellular wireless networking. Now that's what we call mobile access.

Consider the added value SecuriKey™ security software provides, and the new DaynaLINK Mobile Access Server will leave you feeling rather comfortable about your network's future. Instead of shocked.

For a free guide to Mobile Access Communications, call 800-443-2962, ext.552

FAX Response: 801-269-7340, Doc.#3000

Dayna®

Circle 161 on reader service card

These programs make it possible to track down illegal software on your network

Piracy Prevention

by Kristi Coale

SOFTWARE PIRACY OFTEN RESULTS FROM BENIGN INTENTIONS. A graphic designer suddenly needs an application to complete a small project. The designer asks a coworker for the program, copies it, and finishes the report. Task completed, this user may not give another thought to the illegally copied application, which sits on the hard drive in perpetuity.

Multiply this experience by tens or hundreds of employees, and a network manager can face a real chore in sorting out and enforcing software licenses. In large corporations, policing the ebb and flow of software throughout the organization can be a full-time job by itself.

And this job is important because piracy can have serious repercussions. Companies risk stiff fines for illicit software, according to the Software Publishers Association, a worldwide trade organization.

Putting a company on the path toward legal software use can be daunting without a software-tracking system. Three dedicated products tackle the job: Quota from Proteus Technology, KeyAudit and KeyServer from Sassafras Software, and the Software Publishers Association's SPAudit. (On-site auditing services are also available, from InfoLink.) Once a solid auditing system is in place, the other components—writing up a company policy, educating employees, and setting up a license-monitoring system—are not so tough to assemble.

Taking Stock

Piracy proliferates mainly because of poor network management and a failure to understand what makes a piece of software illegal. For instance, a system administrator may buy new software for a new user, but may not follow up later with updates for established users. Some users will then update their software by copying the new employee's version. All of these "updated" copies could be illegal.

Because episodes like this happen frequently, a manager should take an initial inventory of software. This means the manager will have to create a list of all software on every Mac in the company. Fortunately, help is available in the form of asset-management software (see "Legal Eagles: Asset Managers Compared").

An asset-management program looks up the software on individual Macs and generates a database of the applications it finds, along with version numbers and creator codes—useful for identifying an application when a user has changed its name. Asset-management programs can also help a manager standardize and update the versions of each program.

Some programs, such as SPA's SP-Audit and TechWorks' GraceLAN Asset Manager, require you to go from Mac to Mac to build the database. Others, like Sassafras Software's KeyAudit, use System 7's file-sharing conventions and run off a server where all users have read and write privileges. Users log on to the server to conduct their own audits, and the information is collected on the server. Some users prefer this method, as a manager is not "invading" their machines to conduct the audit. However, this can be an extra hassle for the network manager who may need to do some follow-up to ensure that all users conduct an audit.

Programs like GraceLAN Server Manager ($395) from TechWorks (512/794-8533), netOctopus ($645 for 10 to 20 users) from Helios USA (408/864-0690), StatusMac ($29.95 per user for 25 to 75 users) from On Technology (617/876-0900), and Radar ($499 for one administrator and unlimited clients) from Sonic Systems (408/736-1900) are primarily network-management packages, but all can audit Macs along a network. The administrator on the server polls network clients and takes an accounting of the software on each machine. By the time you read this, Symantec should be shipping Norton Administrator for Networks, which includes audit and license-management functions but operates from a Windows administrator.

Armed with the results of the inventory, a manager is ready to perform an audit of the network's software. To do this, the manager needs the purchasing records and licensing agreements for all the software, which will then be reconciled with the inventory. If the purchasing and licensing records indicate, for instance, that a company is licensed for 10 copies of Microsoft Word but the inventory shows that 15 copies exist, then 5 of these are probably illegal.

If you detect illegal software, destroy it and then replace it with a legal copy. Remember to register the new software in the database—periodic maintenance will keep the database current.

If you don't have the time to do all of this yourself, some network systems integrators offer this service. In addition, InfoLink's Software Audit and Hardware Audit Service can do it for you. InfoLink will come out to a firm and use proprietary software to generate the inventory database, as well as a license database culled from purchase orders, manuals, and other proof of software license ownership. The company then generates a software-compliance report and offers advice on how to get the most out of software licenses.

Learning about Licenses

The results of an audit can serve as the impetus for changing the way you buy software. The larger your company, the more flexibility and leverage you have in the types of licenses you can negotiate.

The most common licenses are those given to an individual or to a computer. The former allows a single user to run the application, and the application stays with that user no matter which computer the person uses. Software licensed to a single machine means that the application can be used only on that machine. Multiple users, however, may log on to that computer to use the application. This licensing scheme is common among companies with fewer than 75 computers, because many software companies don't negotiate discounts for small firms.

Site licenses grant the use of a product to a large number of people, but they are expensive. This is why site licensing is on the decline and so-called enterprise licensing is taking its place. An enterprise license is sold to a group of users at a discount. The number of users can be increased to a preset level; when growth reaches beyond that level you negotiate a new license. The net result: a manager has only one license to maintain for the application.

Managers should exercise caution when negotiating this type of license, however, particularly for a server-based product. When you renegotiate a license, the new price usually covers new users but not another server component. The new cost per user may actually exceed the cost per user in the original agreement. So it can be less expensive to simply purchase additional packages and have several licenses for an application rather than a single companywide license.

Another recent twist in licensing, concurrent use, is gaining popularity thanks to the wider use of networks in corporations. This setup saves an organization a lot of money because it needs to buy only as many copies of a program as are in use simultaneously at peak times.

Keeping Software Legal

A company may have several types of licenses, but it should have one way of enforcing them. License-management programs come with a main application that resides on either a server or a manager's workstation, and with client software to let a manager monitor software usage and check on version numbers and legality. For this system to work properly, though, the license-management program must install license control in applications. Applications that do network

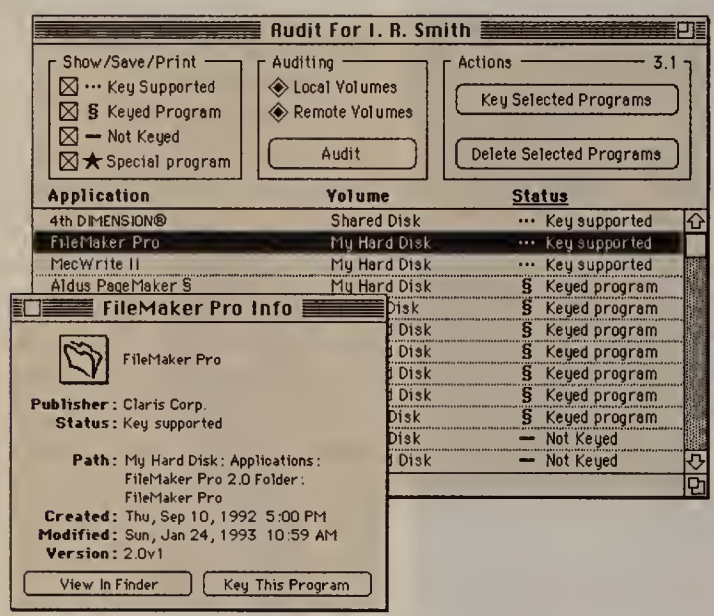
Legal Eagles: Asset Managers Compared

Company	Product	Phone	Toll-Free Phone	Price */ Macs Served	Software Audit	License Management	Software-Use Log	Software Checkout
InfoLink	Software Audit and Hardware Audit Service	303/773-0987	800/592-8348	$875/25	●	○	○	○
Proteus Technology	Quota 3.0	403/448-1970	NA	$495/10–20	○	●	●	●
Sassafras Software	KeyAudit 3.1.9 **	603/643-3351	NA	freeware	●	○	○	○
	KeyServer 3.2	605/643-3351	NA	$680/10–20	○	●	●	●
Software Publishers Association	SPAudit 1.0	202/452-1600	800/388-7478	freeware	●	○	○	○
TechWorks	GraceLAN Asset Manager 2.0	512/794-8533	800/846-9741	$995/1	●	○	○	○

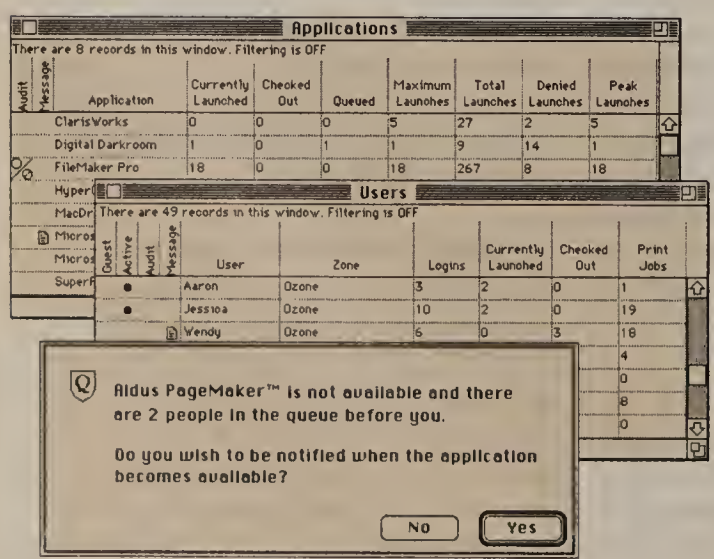
*● = yes; ○ = no; NA = not available. * Some larger-volume discounts are available. ** When used with KeyServer, can distinguish between KeyServer-controlled and personal applications and can convert the latter to KeyServer applications. Also available through AppleLink and CompuServe.*

copy detection need to be compliant with the license-management software.

Two programs are dedicated to all the license-management functions outlined above: Sassafras Software's KeyServer and Proteus Technology's Quota. In each, an administrator sets the number of licenses available for an application and activates the program on either a dedicated server or a manager's Mac. Users launch applications on their Macs as usual. With Quota, the client polls a license server to see if a license for a specific piece of software is available. With KeyServer, a client (an INIT called KeyAccess) initiates contact with the KeyServer machine.



KeyServer Audits KeyServer can audit a network, dividing applications into three categories. Access to a Keyed Program goes through KeyServer, while Not Keyed refers to applications that are not administered through KeyServer. Programs that are Key Supported, such as the FileMaker Pro example, are stray copies of an application supported by KeyServer but without access controls set through KeyServer.



Real-Time Application Tracking Quota tracks application use by program or user (top two screens), and it can alert users when all licensed copies of an application are in use (bottom) and when a copy becomes available.

In each program, the client software notifies the user if no license is available, places the user on a notification list, and then sends a message when the application becomes free.

To a lesser extent, TechWorks' GraceLAN Server Manager also governs concurrent use. You can select the copy-protection option and then input the number of licenses available for a given product. For example, if there are five copies of Aldus PageMaker, the server then allows only five users to launch it at one time. But Server Manager won't notify the sixth user when all available copies are in use, nor will it send notification when a program becomes free.

In KeyServer and Quota, license restriction extends to a mobile workforce, as users can "check out" applications to use on PowerBooks or on their Macs at home like people check out books from a library. For every application that is out, the number of licenses available for it on the network is reduced by one. Loaned applications are active only for a specific period of time, after which they cannot be launched.

When an application is under the watch of a license-management program, the license manager recognizes only the monitored copy for checkout. KeyServer also attaches a key to this monitored application. Without the key, the application will not launch.

These asset-management programs also generate usage reports—an accounting of such things as peak use, the number of users of a program for a given period, and the number of users waiting to use each program. With this information, an administrator can demonstrate the need to purchase more software.

The Last Word

License management carries a dual responsibility for any network manager. On the one hand, it is a manager's job to ensure that all of an organization's software is legal. But the manager should also consider the privacy concerns of users, who may perceive management attention to the contents of their hard disks as invasive. Managers should try to allay these fears before conducting an audit, and even perform the audit in the presence of the user. At the same time, a manager needs to explain what constitutes piracy and lay down the company policy governing software use. The SPA offers free sample policies as well as educational videos to help in developing such policies.

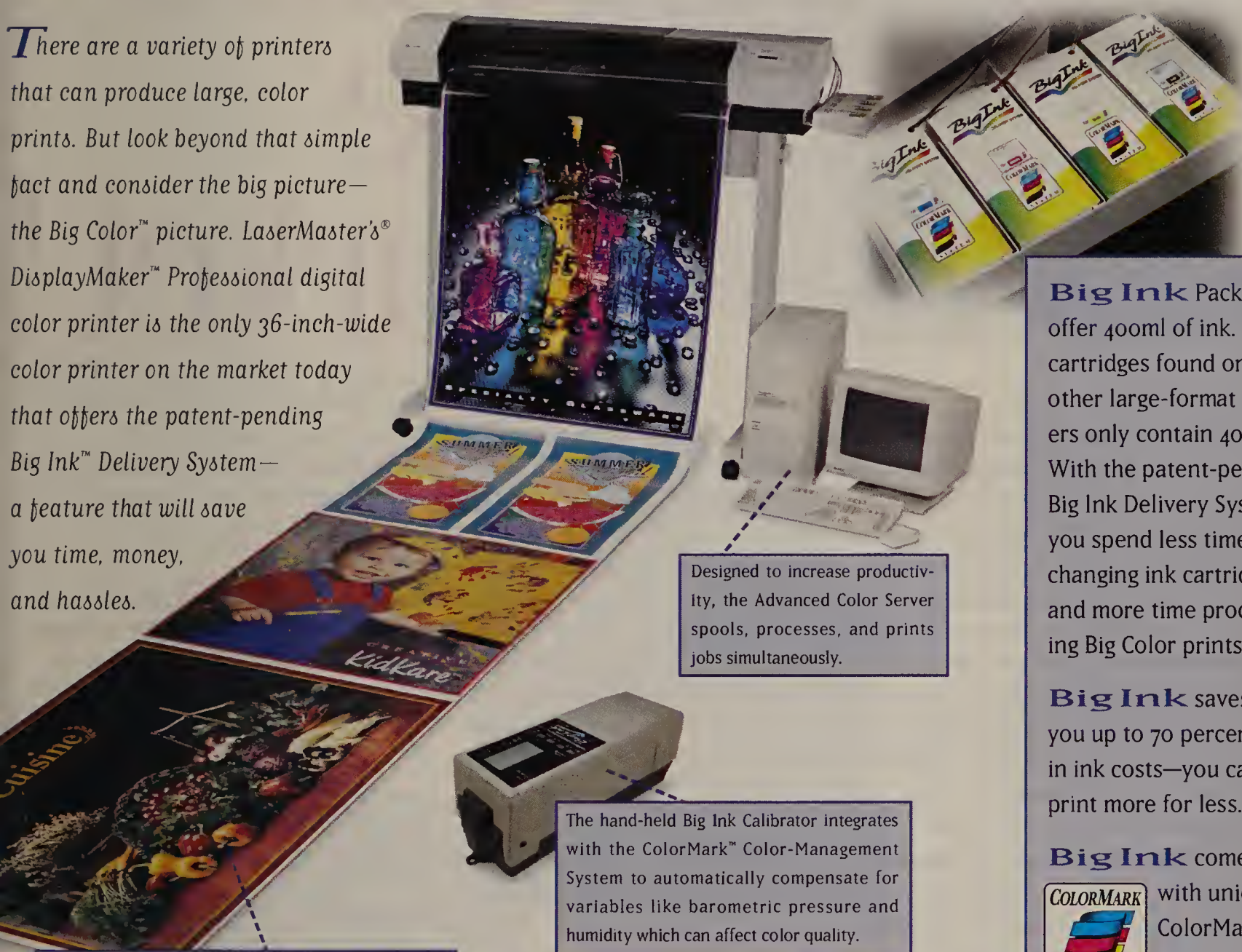
A manager can explain how the license manager and audit system work. When the network manager lets users in on the process and perhaps uses a server-based asset-management package like KeyAudit, users will be less hostile to the new system because they can exercise some control over it.

Adjusting to a license-management system is not likely to be a problem for most network managers. You'll work comfortably knowing that the company's software is perfectly legal and that there is one less task that requires you to be in all places at all times. **m**

Freelance writer KRISTI COALE has covered network-management issues for three years.

Get More Than 1000 Square Feet Per Ink Set!*

There are a variety of printers that can produce large, color prints. But look beyond that simple fact and consider the big picture—the Big Color™ picture. LaserMaster's® DisplayMaker™ Professional digital color printer is the only 36-inch-wide color printer on the market today that offers the patent-pending Big Ink™ Delivery System—a feature that will save you time, money, and hassles.



Designed to increase productivity, the Advanced Color Server spools, processes, and prints jobs simultaneously.

The hand-held Big Ink Calibrator integrates with the ColorMark™ Color-Management System to automatically compensate for variables like barometric pressure and humidity which can affect color quality.

With Big Ink, you can print multiple copies and long banners without running out of ink in the middle of the job. For instance, you can print about 89 photo-realistic 36"x 45" prints with full-ink coverage. Ink cartridges found on other large-format printers will be dry after printing just seven or eight.

Big Ink Packs offer 400ml of ink. Ink cartridges found on other large-format printers only contain 40ml. With the patent-pending Big Ink Delivery System, you spend less time changing ink cartridges and more time producing Big Color prints.

Big Ink saves you up to 70 percent in ink costs—you can print more for less.

Big Ink comes with unique ColorMark™ color profilers that synchronize ink and media to ensure accurate and consistent color from print to print.

DisplayMaker™ PROFESSIONAL

DisplayMaker Pro starting at $756 per month, based on a 48 month lease with a 10% buyout.

Don't settle for just any large-format printer. Look at the big picture. Only DisplayMaker Pro offers the Big Ink Delivery System. Big Ink, combined with the productivity features of the Advanced Color Server, offers both in-house groups and service bureaus the easiest, most economical way to produce Big Color prints. Call today for more information.

(800) 220-9160 Ask For Dept. 88Y

or 612-944-9330 Fax: 612-944-1244

LM® LASERMASTER® COLOR TECHNOLOGY DIVISION

The Professional's Choice™

***Based on full-ink coverage**

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344 (612) 944-9330. LaserMaster Europe, Ltd., Hoofddorp, The Netherlands, (31) 2503-22000. LaserMaster and the LM logo are registered trademarks; Big Ink, Big Color, DisplayMaker, ColorMark, and The Professional's Choice are trademarks of LaserMaster Corporation. This product incorporates the PowerPage interpreter from Pipeline Associates, Inc. All other product or brand names are marks of their respective holders. DisplayMaker output is not intended for extended use in direct sunlight. Specifications and pricing subject to change without notice. (AMF/CLF) 7/94

Circle 103 on reader service card

Mirror RAIDs The Market!

Hungry For Data?

Your computer looks and performs differently than ever before. Your processing power has increased as never expected. Today's applications are far more demanding than even one year ago. Are you relying on your old storage system to support this new processing power?

Now you can have the speed and security that today's applications demand. Mirror is proud to introduce its new line of disk array storage systems, designed to deliver peak performance to any workstation or server. Our flexible, easy-to-operate configurations provide solutions for any work environment—including desktop publishing, multimedia and image processing applications.

Mirror Establishes A New Performance Standard

All configurations include a fast and wide SCSI-2 card that propels data via a 32-bit data path. Most Macintosh computers are limited to data transfer rates of 2MB/sec., but a Mirror RAID system gives you unparalleled data throughput of up to 15 MB/sec! In addition, our disk arrays are compatible with most high-end audio and video editing systems.

Choose Your Level Of Data Security

PRICED AS LOW AS $1999

RAID technology is available in a number of levels, each representing a different way of partitioning data on your hard drives. Mirror's two, three and four drive systems allows support for RAID Levels 0 and 1. This makes them perfect for use with high-speed striping or fully redundant mirroring applications.

Mirror's five and ten drive hot-swappable arrays are ideal for archival storage and large database applications. These systems feature RAID Levels 0, 1, 4 and 5 support. Plus, you get our exclusive hot-swappable drive technology, "on-the-fly" data reconstruction, a drive failure warning feature and automatic block repair—giving you unparalleled data integrity.

We Stand Behind Our Products

Mirror's product development team is backed by a knowledgeable sales staff, award-winning toll-free technical support and a service team that understands your needs. In addition, all of our RAID systems carry a full two-year limited warranty.

Call Now For Your 30-Day Trial

We invite you to try a Mirror RAID system risk-free—if you decide for any reason that it's not for you, simply return it within 30 days for a refund*. We offer a complete line of RAID solutions, from 2GB to 34GB, to fit every need and budget. Call us toll-free at 1-800-643-3371 for complete information on Mirror disk array systems.

Toll Free • 24 Hours

1-800 643-4142

Media: MRMD

Ask about our other industry-leading products including: displays, scanners, optical drives, DAT drives, CD-ROM drives, hard drives, and more!

MIRROR

The Best Thing Next To Your Mac™

5198 West 76th Street, Edina, MN 55439 USA Fax: 612-832-0052 Tech Support: 800-323-9285

(C) Copyright 1994, MacUSA, Inc. All rights reserved. All trademarks are property of their respective holders. Prices subject to change without notice. *Does not include shipping.

Circle 58 on reader service card

BY CARY LU

PowerBook Notes

Ethernet for PowerBooks

ONE OF THE BEST FEATURES OF THE PowerBooks is their ability to fit into a Macintosh network with their desktop cousins. Every PowerBook has LocalTalk networking built in; it's effective but rather slow—essentially, floppy disk speed. Ethernet runs three to ten times as fast, at hard disk speeds.

Direct Connections

There are many ways to connect a PowerBook directly to an Ethernet network. I give approximate street prices for generic devices with 10BaseT connectors or thin coax. Many of the devices are also available with both connectors for an additional $30 to $60. I give list prices for specific products.

The best and fastest way to connect to Ethernet is via a full-speed port:

• An Ethernet transceiver that runs through the AAUI Ethernet port costs about $60. The AAUI port is built into 500-series PowerBooks and the Duo Dock II (and most current desktop Macs). Some older AAUI transceiver plugs will not fit into a 500-series PowerBook; contact the maker for replacement cables.

• Ethernet docks for the Duos come in two flavors with 10BaseT connections. Newer Technology (316/685-4904, 800/678-3726) makes a very small Ethernet MicroDock ($249) with a 10BaseT connector and an ADB port; Asanté Technologies (408/435-8388, 800/662-9686) sells the same unit as the NetDock ($259). The larger EtherDock ($699) from E-Machines/SuperMac (408/541-6100, 800/334-3005) has all standard ports (except for the modem). The EtherDock needs a hardware update for compatibility with the Duo 280/280c.

• A NuBus Ethernet card (for the original full-size Duo Dock) costs $100.

For a 100-series PowerBook or a Duo with other docks, adapters use the SCSI or serial port. Speeds run one-third to one-half as fast as the full-speed Ethernet port (see "Network Speed Tests").

• Small, portable SCSI Ethernet adapters ($270 to $300) draw power from the ADB port. ADB powering does work, although these adapters push the limits of the power available. (Some of the more conservative designs use an AC adapter instead.) The adapters differ mainly in how they handle SCSI cabling. The Asanté Micro EN/SC plugs directly into the PowerBook's SCSI connector to save space, but you can't attach any additional SCSI devices. The DaynaPort Pocket SCSI/Link (reviewed in this issue) requires a short cable and can accept more SCSI devices. These small SCSI adapters make sense if you need to connect to more than one network on your travels.

• Larger SCSI Ethernet adapters use AC power and go for about $220. Besides the larger box, these adapters have an AC power brick. If, like most people, you connect to Ethernet in only one location, you can leave the adapter and power supply in place. The larger SCSI adapters may need a cable adapter for the HDI-30 connector on the PowerBooks.

• Serial port–to-Ethernet adapters—such as The EtherWave PowerBook Adapter from Farallon Computing ($379; 510/814-5000) and the $309 DaynaPort E/Z from Dayna Communications (801/269-7200, 800/531-0600)—provide a solution for Duos without docks. These adapters have a built-in clock that runs the serial port at half to two-thirds the speed of a SCSI Ethernet adapter; they do need their own AC adapter for power. Serial port–to-Ethernet adapters can also work on 100-series PowerBooks, but less expensive SCSI adapters leave the serial port free for other uses.

Indirect Connections

All the methods described so far connect a PowerBook directly to Ethernet. A PowerBook using LocalTalk can also connect indirectly to Ethernet through some intermediary device. Direct connection is always faster, but the indirect methods can be cheaper. Some LocalTalk devices—particularly printers—cannot be put directly on Ethernet.

• A hardware router connects Ethernet and LocalTalk devices together with as many nodes as the networks can support. If you have more than a handful of LocalTalk nodes to connect to Ethernet, a router is essential. Prices begin at $700.

• LocalTalk-to-Ethernet bridges work like routers for two to four Local-

continues

Talk nodes; $300 to $450.

• Software bridges use a Mac to connect Ethernet and LocalTalk networks. Farallon's PowerPath and PowerBridge from Sonic Systems (408/736-1900, 800/535-0725), both $149, can support just one PowerBook; others support up to ten nodes for about $250. A software bridge runs at the same speed as a pure LocalTalk network. Software bridges make sense for occasional use. Hardware routers or bridges work better for heavy use; for one thing, they won't crash.

Wiring Variations

Since wiring installation is often a network's largest expenditure, some Ethernet hardware offers variations on the usual 10BaseT or thin-coax cabling to simplify the wiring. If you can lay down standard Ethernet cable cheaply, such variations are less attractive.

• If you have PhoneNet LocalTalk cabling in place, you must replace it all for Ethernet unless you use Tut Systems' Silver Streak Ethernet hardware (510/682-6510, 800/998-4888), which uses plain phone cable (all four wires), including existing PhoneNet cabling. To combine Silver Streak with 10BaseT, you'll need a $199 adapter from Tut.

• Farallon's EtherWave devices work like ordinary 10BaseT hardware except that you can daisy-chain them together using 10BaseT wiring without using a 10BaseT hub. But their priciness (an additional $50 to $100 per node) cancels out their utility value, since the additional money you'd spend on four EtherWave devices would pay for an eight-port hub.

• A minihub combines a five-port 10BaseT hub with an AAUI transceiver. Apple's $149 10T/5 Workgroup Hub can draw power from the AAUI port or from an optional AC adapter to keep it operational even if the PowerBook is shut down. Asanté's $239 NetExtender Hub gets AAUI power only from the AAUI port. These hubs count as one hop (a single Ethernet network can have four hops).

Servers and Software

When you plug into a network, you are usually connecting to a network server, a desktop Mac that supplies files and storage to any computer on the network, including PowerBooks. With System 7's file sharing, the server can run other Macintosh programs at the same time—with some restrictions. You have to pay attention to (and sometimes wait for) changes in file-sharing settings when you switch storage devices, including removable cartridges and CD-ROMs. Any disruption to the server will also affect any computer using the server. PowerBooks usually don't make good file servers because they are frequently turned off and in transit.

For heavy network traffic, a dedicated Macintosh server running Apple's full AppleShare software will outperform System 7's simpler file-sharing.

The server doesn't even have to be a Macintosh; Personal MacLAN Connect ($199 from Miramar Systems, 805/966-2432, 800/862-2526) turns an IBM PC or compatible on the network into an AppleTalk file server that can run Windows software at the same time; through MacLAN, a PowerBook can print to DOS printers. Personal MacLAN Connect supports many Ethernet and LocalTalk cards for the IBM PC.

For many situations, Farallon's Timbuktu Pro is simpler than file sharing from a server because it can send files from one Mac to another without going through a server or fussing with file-sharing settings. And Timbuktu lets one Mac see and control a second Mac (or a Windows PC; see *PowerBook Notes*, December 1993). But Timbuktu costs from $199 for one Mac to $999 for ten Macs.

Network Software Questions

Since Ethernet hardware is pretty much standardized, you can mix products from many vendors. Install whatever software comes with the device and then update with Apple's latest network software (as this is written, version 1.4.5).

The Apple system software installer will probably put the A/ROSE extension in your System Folder if you specify Ethernet during installation. You need A/ROSE only if you run an SNA gateway to large mainframe computers on an Apple-brand NuBus TokenTalk card. For all other network connections, you can toss out A/ROSE.

When you change between LocalTalk and Ethernet, be sure to switch network types in the Network control panel.

The Personal Ethernet Network

Most PowerBook owners also have a desktop Macintosh; you can create a simple network by connecting the two. In my office, I use a PowerBook exclusively for telecommunications, E-mail, lengthy file uploads and downloads, and faxing while I work on the desktop Mac. Other tasks for a second computer include compiling programs, rendering graphics, running business simulations, and printing complex jobs that may not run in the background. Once you've gotten used to having two computers running simultaneously, you'll never go back to a single computer again. m

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.

Network Speed Tests (In seconds; smaller numbers are better.)

	Timbuktu Pro	System 7 File Sharing
Via Ethernet		
second Mac IIfx	16	26
Power8ook 540c	23	19
Dayna SCSI/Link SCSI Ethernet adapter		
Power8ook 180	51	50
Farallon EtherWave serial-port adapter		
PowerBook 180	73	102
Duo 210	68	74
DaynaPort E/Z serial-port adapter		
Power8ook 180	93	105
Duo 210	98	99
Via LocalTalk		
PowerBook 540c	137	242
Power8ook 180	167	268
Duo 210	170	232
Via Dayna PathFinder Ethernet-to-LocalTalk router		
Duo 210	150	179
Via Sonic PowerBridge software bridge running on a Mac IIfx		
Duo 210	171	218

Time to transfer a 2.5MB folder using a Mac IIfx as the file sender and file server, with no other network traffic.

Now your everyday purchases can save you money on Apple products.

The Apple Citibank card earns you rebates of up to 5% — good toward Apple products. Plus, your first year of membership is free. Just fill out the application below.

1 **YES, I want to earn rebates of up to 5% toward the purchase of Apple products.**
Select one: ☐ MasterCard® ☐ Visa®

Please Tell Us About Yourself

2

Please **Print** Your Name As You Wish It To Appear On The Card (First, Middle, Last)				Your Home Address, Number And Street		Apt. #
City Or Town	State	Zip Code	Years At Address	☐ Own Home ☐ Rent ☐ Other ☐ Own Condo/Co-op ☐ Live With Parents		Social Security Number
Date Of Birth (Month/Day/Year)	Mother's Maiden Name		Home Phone Number And Area Code ( )		Name Home Phone Is Listed Under	
Previous Home Address, Number And Street	City Or Town		State	Zip Code	Years There	

Please Tell Us About Your Job

3

Business Name Or Employer	Position	Years At Job	Business Phone Number And Area Code ( )
Check Here If You Are: ☐ Retired ☐ Self-Employed	If Retired Or Self-Employed, Give Bank Name	Bank Phone Number And Area Code ( )	Bank Account Number

About Your Income

4

You do not have to include alimony, child support, spouse's income, separate maintenance or other income unless you want us to consider it in connection with this application. Your total **yearly** income from all sources must be at least **$12,000** to be considered for cardmembership.

Your Total Personal **Yearly** Income — Other **Yearly** Household Income

Other **Yearly** Income Sources

Would You Like An Additional Card At No Charge?

6

If Yes, **Print** The Name Of The Additional Cardmember (First, Middle, Last)

Important Account Information

5

Please Check Those That Apply. Be Sure To Specify Bank/Institution Name.

☐ Money Market/ Investment Account	Bank/Institution Name:
☐ Checking Account	Bank/Institution Name:
☐ Savings Account	Bank/Institution Name:

☐ Visa/MasterCard ☐ Diners Club ☐ American Express
☐ Dept. Store/Sears ☐ Gasoline ☐ Other

Please Tell Us About Your Computer Use

7

Do You Own A Computer? ☐ Apple ☐ Other ☐ None

Do You Use Your Computer At? (Check Those That Apply) ☐ Home ☐ School ☐ Business

Please Sign This Authorization

8

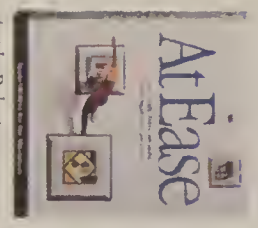
I certify that I meet/agree to all the Citibank credit terms and conditions on other side. Please allow 30 days to process this application.

Applicant's Signature
X _____ Date _____

FOLD, MOISTEN ALL THREE SIDES, SEAL AND MAIL.
HAVE YOU INCLUDED YOUR ☐ SOCIAL SECURITY NUMBER ☐ PHONE NUMBER(S) ☐ SIGNATURE?

1UBAL 014NB LY19F 0000

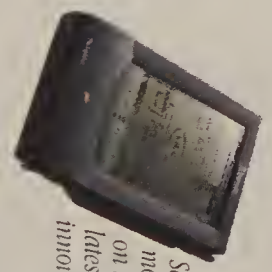
Turn your everyday credit card purchases into big savings on Apple hardware and software.



Apple Rebates save you money on big Apple purchases, or little ones.

Earn rebates of up to 5% — good toward the purchase of Apple products.

Now, it's easy to earn big savings on Apple products. Just use the Apple Citibank card for everyday purchases, and you'll earn Apple Rebates of up to 5%. Then, use your rebates toward the purchase of a PowerBook® computer, Newton™ MessagePad,™ At Ease™ software or other Apple products. You can accumulate rebates of up to $500 in any year — up to a maximum of $1,500 over any three-year period.*



Save money on the latest Apple innovations.

Find your best price on Apple products. Then use your rebates to save even more.

Just shop at any authorized Apple dealer. Once you find your best price on Apple products, you can use your rebates to save even more. So you'll know you're getting the best deal on Apple hardware, software and peripherals.

The Apple Citibank card is accepted worldwide, so it's easy to earn rebates toward Apple products.

No fee first year and a competitive APR.

The Apple Citibank card has a low, variable annual percentage rate (APR) of 16.65%. What's more, there's no annual fee for your first year.*

Apply now and earn Apple Rebates of up to 5%. And all the service you'd expect from Citibank.

With the Apple Citibank card, you get more than Apple Rebates. You get all the service and security of the nation's leading credit card company. So apply for your Apple Citibank card today. Just complete the application on the reverse.

**See below for details. Certain conditions apply.*

Apple CITIBANK

FOLD, MOISTEN ALL THREE SIDES, SEAL AND MAIL. HAVE YOU INCLUDED YOUR ☐ *SOCIAL SECURITY NUMBER* ☐ *PHONE NUMBER(S)* ☐ *SIGNATURE?*

IMPORTANT!
This application cannot be processed unless sections 1-8 are completed.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 737 HAGERSTOWN, MD

POSTAGE WILL BE PAID BY ADDRESSEE

APPLE CITIBANK CARD
CITIBANK NEW CARDMEMBER SERVICES
14700 CITICORP DRIVE
HAGERSTOWN MD 21749-9972

FOLD HERE ↑ FOLD HERE ↑

Annual Fee	None first year. $20 thereafter.
Annual Percentage Rate	Currently (September 1, 1994) 16.65% for purchases. 19.8% for cash advances.
Variable Rate Information	The annual percentage rate for purchases may vary each calendar quarter. We will calculate the variable rate by adding 9.4% to the rate disclosed as the U.S. Prime Rate as reported in the "Money Rates" table of *The Wall Street Journal* on the third Tuesday of March, June, September and December of each year. Because the annual percentage rate is variable, the current rate may not be in effect when your card is issued. This rate will not be lower than 12.9% or higher than 19.8%. However, if a cardmember fails to keep all his/her Citibank accounts in good standing, the rate will increase to 19.8% on the full purchase balance.
Grace Period For Purchases	20-25 days
Minimum Finance Charge	50¢
Method of Computing The Balance For Purchases	Average Daily Balance (including new purchases)
Late Fee On Purchases And Cash Advances	$15
Transaction Fees For Cash Advances	At a financial institution or by check, 2% of amount of advance but not less than $2 or more than $10. At an Automated Teller Machine, $1.75.
Over-The-Credit-Limit Fee	$10

The information about the costs of the card described in this application is accurate as of September 1, 1994. This information may have changed after that date. To find out what may have changed, write to Citibank at P.O. Box 6116, Sioux Falls, SD 57117-6116.

By signing this application, I authorize Citibank (South Dakota), N.A. ("you") to check my credit history, and I authorize any references listed to release information to you or any of your affiliates regarding my eligibility for the Apple Citibank credit card and any renewal or future extension of credit. I certify that I am 18 years of age, or older, and that the information provided is accurate. If I am issued a card, I authorize you to exchange information about how I handle my account with Citibank affiliates, credit bureaus and proper persons. If I request an authorized user to be added to my account, I understand that account information will also be reported to credit bureaus in the authorized user's name. I authorize your affiliates to perform certain customer service and payment processing functions for my Citibank credit card account. I also authorize you and your affiliates to periodically exchange information regarding any account(s) I may have with you or your affiliates. I understand that if I use the card or authorize its use or do not cancel my account within 30 days after I receive the card, the Citibank Agreement sent to me with the card will be binding. I have read and understand the disclosures above.

In order to be considered for an Apple Citibank card you must complete and sign the application. Omission of any information requested may be reason for denial.

Apple Rebates are calculated at 2.5% on your total annual net purchases up to $3,000 and 5% on total annual net purchases over $3,000. Apple Rebates are not earned on returned purchases, transferred balances, cash advances, fees and finance charges. Apple Rebates cannot be applied to any applicable sales tax, shipping and handling. Apple Rebates are subject to a maximum of $500 over any 12 consecutive months, for a maximum rebate of $1,500 over any three-year period. A minimum of $20 in Apple Rebates is required each time you redeem. Details and limitations will be provided upon cardmembership.

The Apple Rebates Program ("Program") is provided by Apple Computer, Inc. ("Apple") which is solely responsible for Program operation and rebate credit and fulfillment. Citibank (South Dakota), N.A. ("Citibank") is the issuer of the Apple Citibank card. Holders of the Apple Citibank card are entitled to participate in the Program. Citibank also performs certain administrative services for Apple in connection with the Program.

©1994 Citibank (South Dakota), N.A. Member FDIC

©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Mac, PowerBook and Performa are registered trademarks of Apple Computer, Inc. At Ease, MessagePad and Newton are trademarks of Apple Computer, Inc.

CB-0053A (9/94)

THE DESKTOP CRITIC

BY DAVID POGUE

Money in Your Pocket

The Newton gets down to business

LONG AFTER THE MEDIA'S HECKling of the original 1993 Newton died away, a funny thing happened to Apple's hand-held pygmy computer: it got useful. The transformation took place slowly and silently, a result of software updates, mechanical improvements (such as the MessagePad 110), and neat new programs from non-Apple companies. This handwriting-recognizing, Mac-descended palmtop is finally approaching worthwhilehood.

So why cover Newton software in a Macintosh magazine? Because Newton software holds a lesson for Mac software developers. Newton programs, as enforced by the machine's teeny screen and tiny memory, are simple and efficient. There are no submenus, no nested folders, not even icons for your documents. You rarely need a manual for a Newton program. (When I was your age, we used to say that about the *Mac.*) As you'll read here, a Newton program's motto is "Do one thing very well" . . . usually.

iambic TimeReporter 1.1

Each Newton program seems designed to eliminate a different category of paper scraps in your pocket. The Newton's built-in Note Pad, of course, replaces cocktail napkins and pocket penny pads.

iambic TimeReporter, on the other hand, is a Newtonized time slip ($129; iambic software, 408/746-3709). It can grab the names of your clients, or the dates of your appointments with them, from your Newton Names or Dates files, saving you handwriting. It can chat in the other direction, too: you can enter an appointment into TimeReporter (for billing purposes) and have it show up on your Dates screen. The stopwatch keeps track of your time even when the Newton is off—neat trick—or you can enter your working stints manually; a little Expense slip lets you bill your client for the occasional cab or pizza.

When it's all over, the program can display, print, and fax tidy summaries organized by client, project, or whatever. My only befuddlement: why can't you write in your hourly rate, so you can also see how much you earned (and print an invoice)? iambic's only answers: (a) we'll have that in version 2, and (b) lawyers let their secretaries do that stuff anyway.

ExpensePlus 1.0.1

Four aspects of the smooth, smart, solid ExpensePlus make using it better than recording trip expenses on paper ($139.95; State of the Art, 714/753-1222). First, ExpensePlus does the math for you, even converting foreign currency. Second, it looks clean and inviting on your little Newton screen; the 12 neat icons give you direct access to expense slips for things like Parking, Supplies, Tips, and Fares. Third, the program's brains save you effort: if you want to record a meal, for example, ExpensePlus automatically proposes breakfast, lunch, or dinner, depending on the time of day. Furthermore, you can scratch in, say, "$7.50 cab" in your Note Pad, and the Newton's Assist button automatically creates an appropriate expense slip. And fourth, ExpensePlus comes with Macintosh templates for Microsoft Excel and Claris's FileMaker. When you get back from your trip, connect the Newton to your Mac using a printer cable, transfer the data collected during your trip, and print out the beautifully formatted expense reports.

Still, ExpensePlus has a couple of SmallMinuses. It wolfs down 238K of memory; for this one-trick pony, that's a 12-course dinner. The serial number required before your first use is stupidly printed on the registration postcard, which, if you're a good little camper, you've already mailed away. A question, too: what are you supposed to do with the actual receipts that ExpensePlus so nicely summarizes? Despite your high-tech investment, you wind up with little scraps of paper in your pockets after all.

MobileCalc 1.03

Of all the computers on earth, the Newton, with its 3-inch-wide screen, would seem the worst choice for a spreadsheet. MobileCalc, for example, starts up showing only three columns ($119; MobileSoft Corporation, 408/376-0497). True, it has every conceivable feature for alleviating the real-estate problem—scrolling controls, a zoom-out button, first-row/column locking—but you still feel like you're laying out the *National Enquirer* on a Mac Plus screen.

Believe it or not, that's not even MobileCalc's biggest problem, which is speed—MobileCalc doesn't have any. Not that the Newton is a Cray or anything, but this program is *really* slow on my original Newton: it takes three to five seconds for *anything* to happen.

There are 70 math functions; you can create formulas; and little on-screen palettes simplify entering numbers and words. But you can't change the size or style of numbers or text, and 367K is too much to cede to such lethargy.

QuickFigure 2.0.1

If MobileCalc's not quite your speed, there is, fortunately, another contender for the title Excel of the Newton world: QuickFigure ($39; PelicanWare, 503/221-

continues

Keep the Flame Alive

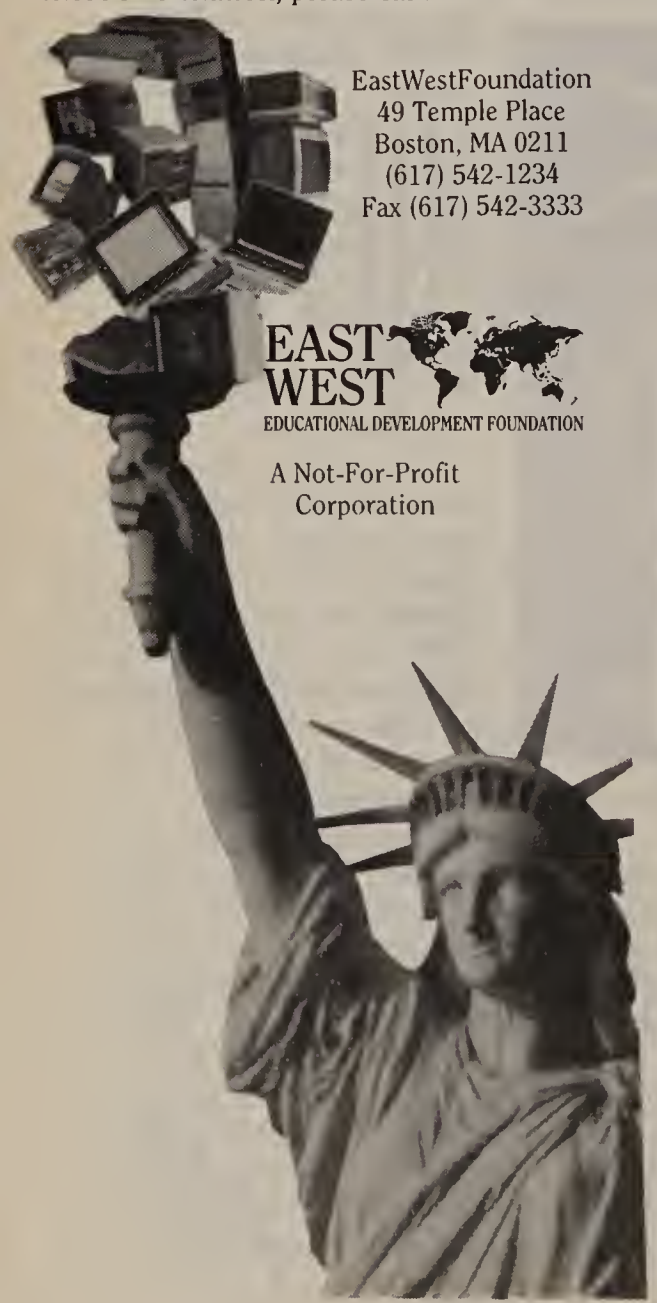
The lamp of freedom and the light of learning can take many forms.

Your company's used computers, laser printers, modems, and other surplus equipment can help empower young minds in America, and advance the development of emerging democracies around the world.

The East West Foundation takes your surplus or used equipment and distributes it to American schools and charities and to democratic and educational institutions in Eastern Europe, Africa, Asia, the Commonwealth of Independent States, and Latin America—wherever it can make a difference. And it *does* make a difference.

Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

To arrange for a donation or for more information, please call:



1148). For a Newton program, this spreadsheet is fast, cheap, and slim (a paltry 125K; 30K more for graphing). QuickFigure neatly ducks the cell-size issue by making you enter numbers in a little input bar, just as Excel does (instead of letting you write directly into a cell, à la MobileCalc). The benefit, of course, is that you can see 5 columns and 17 rows in QuickFigure's start-up setup.

If you had to name the bare essentials for a useful spreadsheet, you'd probably arrive at this program: formattable text and numbers; copy, paste, fill; 85 math functions plus IF-THEN statements; a rudimentary graphing program (installed separately); and an online 88-screen manual (also separate). QuickFigure also niftily integrates with the rest of the computer: you can scrawl "Figure 23*434/23" in the Note Pad, for example, and tap Assist for the answer. You can also send chunks of your spreadsheet (but not graphs, alas) to the Note Pad for incorporation into your memos. The import/export to Excel is clumsy, but I'll take QuickFigure over the back of an envelope any day.

Accountable 1.03

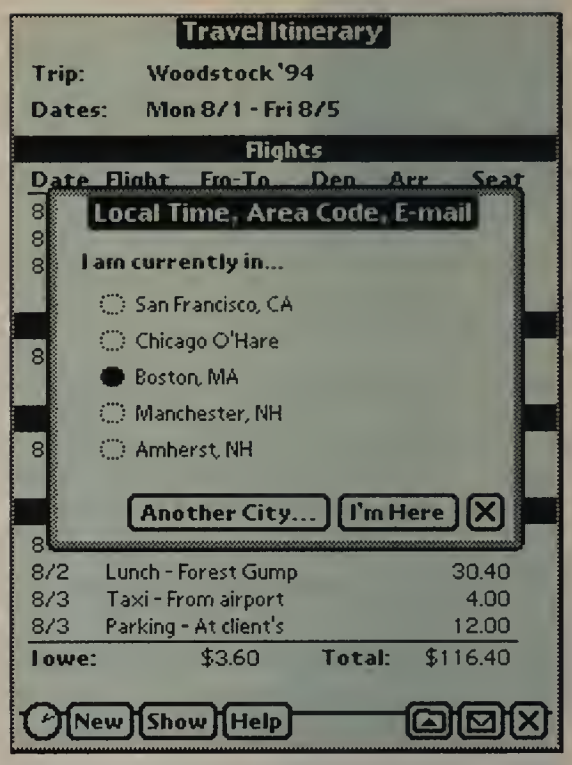
Accountable ($39; Nomadic Technologies, 216/331-5771) is an ingenious idea. It's a checkbook balancer that's vaguely—*vaguely*—reminiscent of Intuit's Quicken on the Mac. As you scurry through your daily routine, paying bills, visiting cash machines, and so on, you can use Accountable to mind your checks and balances. Unlike Quicken, however, Accountable doesn't print checks, do graphs, offer a funds-transfer option, or make reports.

Ever hear the epithet "un-Mac-like" applied to a Macintosh program in which scroll bars and menus have been replaced by the programmers' own crude creations? Ladies and gentlemen, I give you: the first un-*Newton*-like software. Accountable substitutes dots for diamonds (to represent pop-up menus) and goofy-looking triangles for the standard Newton up and down buttons (for scrolling lists).

I would have been utterly dismissive of this software effort until I learned that version 2.0, supposedly ready as you read this, addresses virtually every whine of mine so far. It also adds reports, graphs, a Mac front end, and exportability to the personal-accounting software god itself, Quicken. If that's all true, I won't mind holding Accountable.

PocketMoney 1.0.2

Until Accountable 2.0 crawls out of its cocoon, I'll be using this very similar—but better designed—shareware program ($20; Hardy Macia, 1413 Surrey Ln., Wynnewood, PA 19096, or in the Mac-



Gulliver's Expenses Tell Gulliver what city you're in, and it resets your Newton's clock, area code, and NewtonMail phone number. Gulliver also tracks your expenses (background).

world area of America Online). It has two crystal-clear screens: one that shows a register, like a checkbook, and another where you write in each transaction. Like a good little Newton program, its customizable pop-up lists save you handwriting. Incredibly, the Read Me file says that even this little shareware creature can export to Quicken, although I couldn't find any instructions.

TapWorks

My jaw dropped clear to the coffee table when I read about this one. In a single *Newton* program, you supposedly get a miniature ClarisWorks: four integrated applications that can dress up a full letter-size page ($119; Avail Technology, 408/730-6855).

Well, sort of. The four "applications" turn out to make text boxes, spreadsheets, graphs, and drawings. The mini-MacDraw is by far TapWorks' strongest feature: you can draw shapes, apply your choice of fill and line styles, and even align them (sadly, drawings are the only data you *can't* export to the Note Pad). The spreadsheet is so slow it's practically unusable; even if you write a word quickly into the cell-input box, TapWorks can't see it as a word, and instead interprets a letter or two at a time.

On one hand, the program has a million beautiful ideas, such as the Connect command that (at last!) lets you type on your Mac keyboard to enter text into the Newton. On the other hand, it has a million shortcomings: tapping a graphic object doesn't select it (you have to circle it); you can't use your spreadsheet data to

continues

What Makes A Desktop Projector™

A Desktop Projector?

It's not just the innovative, lightweight design. Or the remarkably easy-to-use controls. It's not even the brilliantly vivid computer and video images it so effortlessly projects—even in well-lit meeting rooms.

It's all of this and more.

In fact, one look at Proxima's Desktop Projector series of LCD projectors and you'll know that a new breed of computer peripheral has arrived. It's the ultimate way to present information and share data.

Look better, work smarter

Now you can use the same computing tools you already use at your desk to enhance the productivity of your meetings. With Proxima's Desktop Projectors, everyone can see, share, and shape information together. That's what we call Desktop Projection. It helps build consensus in meetings; lets workgroups create project schedules, budgets and other documents more quickly; and leads to faster, smarter decisions.

And that saves you time and money.

Of course, you can also project brilliant presentations that captivate your audience. Not only do Desktop Projectors let you incorporate sound, motion, and our amazing Cyclops® cordless mouse, but they eliminate the need for slides, flip charts, and transparencies.

Any computer, any application

Proxima's Desktop Projectors connect just like a monitor to any PC or Mac and work with your favorite productivity-enhancing software. Starting as low as $4,995, there's a model for almost any budget or application—from high-performance color to multimedia projection.

Portable Desktop Projectors go where the action is.

So whether it's a sales presentation, management discussion, or training session, Proxima's Desktop Projector series lets you project the power of your computer in the meeting room.

For more information or the dealer nearest you, call us today.

1-800-447-7694

PROXIMA®

Projecting the power of your computer in the meeting room.℠

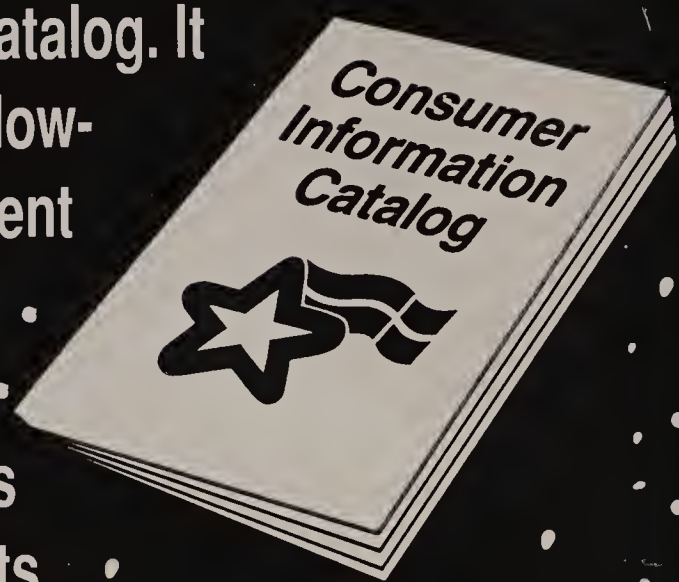
Circle 47 on reader service card

Desktop Projector 2800 shown above.

Proxima Corporation 9440 Carroll Park Drive, San Diego, CA 92121, (619) 457-5500. In Europe: Horsterweg 24, 6191 RX Beek, The Netherlands, +31-43-650 248. Proxima is a registered trademark and Desktop Projector and Desktop Projection are trademarks of Proxima Corporation. Other trademarks are the property of respective owners.

MAY THE SOURCE BE WITH YOU

Don't let the dark forces of ignorance defeat you. Right in this galaxy, you can tap into the source -- the free Consumer Information Catalog. It lists free and low-cost government publications on cosmic topics such as federal benefits, jobs, health, housing, educating your children, cars, and much, much more. So dispel the darkness and send for the source. Write today to Pueblo, Colorado for the free Consumer Information Catalog. Just send your name and address to :



Consumer Information Center
Department Source
Pueblo, Colorado 81009

A public service of this publication and the Consumer Information Center of the U. S. General Services Administration

create graphs; and the whole thing creaks along like a swamped rowboat. On the *other* other hand, maybe I'm like the guy who says the bear dances badly; I should just be grateful that it dances at all.

Gulliver 1.22

Gulliver is an electronic itinerary sheet ($95, on a 1MB RAM card $135 [a very good deal]; True North, 603/673-5040). Plugging in flights and reservations can be quick fun and involve almost no handwriting: you just tap to select from Gulliver's pop-up lists of airlines, hotels, car-rental outfits, and so on. (It prominently displays 800 numbers, too.) A minute or so should cover the creation of a complete country-crisscrossing excursion.

Gulliver's features for use en route are hardly Lilliputian, either. The program keeps your frequent-flier numbers ready at a tap, calculates the length of each flight, tells you the local area code and NewtonMail phone number for each city, and even reminds you to reset your watch when you cross time zones. Plus there's a convenient slip for recording your incidental expenses (only a few stylus-taps less handy than ExpensePlus). Gulliver integrates neatly with the rest of your Newton miniworld, too: you can enter expenses by writing them on the Note Pad, copy departure times to your Date Book, and copy your entire itinerary to the Note Pad. I was a tad confused by Gulliver's use of the little X button, which sometimes means OK and sometimes means Cancel; otherwise, as a punster might say, Gulliver is pretty swift.

The Upshot

You'd be a happy wanderer indeed with clean, well-designed programs like Gulliver, ExpensePlus, and TimeReporter nestled on your Newton. Unfortunately, the Newton's attic space for software isn't what you'd call yawning: it's an absurdly puny 150K on the original models and 450K on the MessagePad 110. (Apple advertises larger capacities but then uses up most of it for its own system software.) Since these programs consume up to 350K apiece, you can understand why you must buy an expensive RAM-expansion card to use even one of them.

If you're unfazed by that added requirement, then this new crop of software will generally stick by you. Your finances and travels will at last be well in hand. **m**

Contributing editor DAVID POGUE is coauthor of the best-seller *Mac & Power Mac Secrets*, second edition (IDG Books Worldwide, 1994). It comes with 1100 pages, $300 worth of commercial software, and six Newton secrets.

ADD YOUR *Handwriting* TO THE FONT MENU!

Arial
Courier
▶ Your Font
Helvetica
Times

Perfect Holiday Gift

Signature Software

Personal Font™

The Original Cursive Handwriting Font

Version 1.1

Patent Pending

Now for Mac AND Windows!

Font Technology Breakthrough!

Now you can add your own handwriting to the Font Menu! Signature Software's Personal Font is a custom font which can reproduce your handwriting - including the exact way that you shape and connect your letters. This unique patent pending technology will actually vary the shapes of your letters depending on the characters around them. No other font can do this!

PERSONALIZE YOUR CORRESPONDENCE

With Personal Font you can join the personal impact of your own handwriting with the convenience and power of you personal computer. Imagine running your spell checker on your handwriting! Use your word processor's cut and paste features to polish up your handwritten letters. Add a friendly handwritten P.S. note to your business correspondence. Or even sign your FAX-modem messages!

CREATE YOUR FONT TODAY!

For your own Personal Font, simply write the 26 words as well as the capital letters, numbers and punctuation found on the back of this page. From that sampling, Signature Software font designers will individually convert your handwriting into a custom font which duplicates the unique way you create each word - not just each letter. Your font will include your signature and will even have a name which you specify.

HANDWRITING FROM THE KEYBOARD.

Personal Font captures your handwriting at its best. Your font has the same style and character as your own handwriting - without the inconsistencies and inkblots! With your own Personal Font in the Font Menu you'll find yourself creating handwritten notes without hesitation - straight from your keyboard!

Since each order is custom, please allow two to four weeks processing time. If you're in a hurry, for an extra $25 Signature Software will ship your order within five working days.

Actual Handwriting vs. Personal Fonts:

Peter's actual handwriting.
Peter's Personal Font.
Peter Matthews - Toronto, ONT

Colin's actual handwriting.
Colin's Personal Font.
Colin Johnson - Portland, OR

Your Personal Font can be installed and used as simply as an "ordinary" font. It appears in your menu and functions just like any other typeface in your computer.

System Requirements:

Mac - System 6.05 or higher
PC - Windows 3.1
Postscript printers or interpreters. On non-Postscript printers, characters will be disconnected, just as they appear on the screen, *similar to this.*

Handwrite your holiday correspondence to your friends and family using your OWN handwriting font on your computer! Simply compose your personal letter using your font on your favorite word processor. Then fill your printer with holiday cards and Mail-Merge print using a list of your relatives and friends. Voila! Personalized handwritten cards ready to mail. (You can even address your envelopes the same way!)

Just carefully write the 26 words and symbols on the back of this form ONCE, and from then on all your handwriting will be at its best. There's no better way to personalize your computer than with your handwriting font in your font menu!

Dave Fenwick
Signature Software, Inc.
(800) 925-8840

P.S. This is MY Personal Font!

Signature Software, Inc.
489 N. 8th St. Suite 201 — 1-800-925-8840
Hood River, OR 97031 — 1-503-386-3221

THERE'S NO OTHER FONT LIKE YOUR PERSONAL FONT, AND HERE'S HOW TO ORDER!

ORDER YOUR FONT!

Send your completed form to:

Signature Software, Inc.
489 N. 8th St. Suite 201
Hood River, OR 97031

Because each order is custom please allow 2 to 4 weeks. Add $25 for 5 day processing (48 hour processing is available).

*$7.50 special handling for Personal Font includes personalized disk, personal test document and copy of original form.

Price Reduction!
~~$229.95~~
$99.95 $US
+ $7.50 shipping and special handling*

Signature Software **Personal Font**™
Now for Mac AND Windows!
Dealer Inquiries Welcome

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

VISA MasterCard AMERICAN EXPRESS DISCOVER
(circle one or enclose check)

CARD NUMBER _____

CARD EXPIRATION _____ PHONE _____

CARDHOLDER'S SIGNATURE _____

○ 3.5" ○ 5.25" (circle format desired)

☐ *Yes! RUSH me my Personal Font in 5 working days for $25 extra*

☐ *Yes! Include SUPERscripts with my Personal Font order for the special bundle price of $139.95*

Shipping and Special Handling*

United States	International
☐ Regular $7.50	☐ Regular $15.00
☐ Overnight 48 State $15.00	☐ Overnight $40.00
☐ Overnight AK, HI, PR $25.00	(select one)

"For those times when Palatino or Arial just won't do, fonts from Signature Software come to the rescue" -Computer Shopper
"I recommend these fonts for each and every person who has heard (or read) the words, 'typing is impersonal.'" -MacWorld

Also Available: **SUPERscripts** Cursive Font Pack
Five Fantastic Handwriting Fonts!
Tsui
Lisa
Wilson
Joelyn
Victoria

ONLY $49.95

Special Cursive Handwriting Font Bundle
Receive BOTH Personal Font and SUPERscripts for the special low price of **$139.95**

For More Product Info Circle Reader Service Number 300 — MW9411

Signature Software for Mac and Windows

Personal Font™

The Original Custom Cursive Handwriting Font

Name:_____ Phone #: _____

SAMPLE FORM INSTRUCTIONS

1. Write your signature within the Signature box. For best results, try to ensure that the signature fits within the box.
2. Write the words shown within each box using the broken lines as a base. Begin each word on the left side of the boxes. Characters can be connected or disconnected or a combination of both!
3. Write naturally and consistently. Practice first on a separate sheet of paper. Remember, what you write here will become the final font.
4. For best results use a rollerball or fibertip pen. **Do not use ballpoint pens or pencils!**
5. Use the grid lines in the boxes as an aid to maintain consistent height and slant. Be sure capital letters are proportional to lower case letters.
6. Write your capitals normally. Consider the appearance of capitals when at the beginning of words AND when words are all capitalized. Don't forget the punctuation!
7. Name your font and complete the ordering information on the front of this form. **Indicate PC or MAC on card!**

NOTE: Strike out mistakes and write corrections nearby. Signature Software can even make changes after you receive your font!

kagvels

NAME YOUR FONT!

The name must be seven alphabetic characters or less.

Signature (your name) adjoint bowman

codiqua doubt egtype forgiven

geography hydrodyke ionize jewfishes

kaqmek lysozyme moixe novque

oxytube polygyne quote rybema

sexyque toyjoke unfaxed vogue

wayward xylose yachtque zigzag

( ) { } [ ] An . Be , Co ! Do ?

Ex . Fo : Go " Hi ' In ` Ju ~ Ko _

Lu # Mo % No $ Of & Pa | Qu @ Ro ^

Ni + Th - Un * Ve = Wi / Xy \ ' Ye '

Zo " < > 1 2 3 4 5 6 7 8 9 0

Copyright ©1994 Signature Software, Inc

Personal Font Personalized Handwriting Font Signature Software, Inc. - Reader Service #300 1-503-386-3221 or 1-800-925-8840

THE ICONOCLAST

BY STEVEN LEVY

emptyWorld

Apple's online service is a slow starter

LOGGING ON TO EWORLD, ONE experiences a sweet thrill of arrival. You are welcomed by the sound of traffic—a busy urban street with impatient motorists honking horns. And then the eWorld Town Square comes into focus, a quaintly drawn cartoon of a city center defined by a set of picturesque buildings. By simply clicking on one of these structures, you can enter a component of the eWorld universe. Cyberspace as real space. Interface as geography. For those few seconds, you are justified in thinking that there is something new under the virtual sun, and that Apple has fulfilled the promise implicit in its major enterprises—formerly arcane technology has been transmogrified into accessible, and delightful, art.

But that is the high point of a trip to eWorld, a tourist town that, at least in the days following its much-heralded rollout, hardly deserves a hotel stay. The Town Square turns out to be sort of a Potemkin village. Once you venture past the facades, the visual-geography representation is abandoned. As with almost every other online service, the metaphor of rooms and auditoriums and cafés is presented verbally, not graphically, and the cursor choices are words and icons, not map points. At its worst, the "places" you go with eWorld are throwbacks to the teletype days. I am thinking here of the implementation of Easy Saabre—the airline booking and information service is one of the most useful features of eWorld, but it retains its ancient command-based interface.

The contrast seems characteristic of the first days of eWorld. The designers of eWorld have obviously done some serious thinking about what an online service should be—this is apparent from the opening screen, the digitized sounds, and particularly the stylish visuals; they are clean, colorful, and generally consistent, a welcome evolutionary step from the previous standard, the interface of America Online. (Apple licensed AOL's software and built eWorld upon that bedrock.) And the implementers have also done some good work, making navigation relatively bug-free. They have recruited an eager, if somewhat goody-goody, band of online guides called the Community Conference Crew—a cyberspace version of a high-school pep squad, always willing to help puzzled frosh and extol the virtues of alma mater at every turn.

But my excursions into eWorld have convinced me that Apple has been too parsimonious in its initial offerings. All too often one encounters the dread hard-hat icon, indicating that a crucial feature is "under construction." Even worse is a paucity of content from the participants. One quickly learns that entering a conference room, a café, or an auditorium on eWorld results in a near empty screen, with a legend above noting "People Here: 1." (Meaning me. Alone again, cybernetically.) The asynchronous discussion boards, the heart of any online system, sit forlornly, waiting for replies to the few comments posted. On a hot conference system like the San Francisco Bay Area's WELL, topics commonly generate a hundred impassioned replies in a day; many Usenet groups pile up text quicker than Tom Clancy closing in on his next advance. eWorld moves more ponderously.

The charter denizens of eWorld, an endangered few, are painfully aware of this. One citizen, embarking on a long-distance move, closes a message with a hopeful encouragement: "Hang in there e-Ghostown!" Another eWorld traveler breathes a sign of relief so deeply that it resonates in cyberspace—"I finally found people," he says. "For a while there I thought I was playing Myst!"

Welcome, stranger, to emptyWorld.

Climbing the Curve

Now I know of course that any new service, just like a new settlement in a physical wilderness, will start with only the bare population base of its founders—every online service was empty at one time. But when beginning an online service in 1994, a time when millions of people have sampled the likes of CompuServe, Prodigy, and America Online—and millions more are keenly interested in what this Internet thing is all about—it is not enough just to open shop with a slick interface and a brand name that means something magical to about 14 percent of the computer market. The foundations of cyberspace have already been laid, by others.

Peter Friedman, general manager and director of Apple's online services, doesn't worry about this. He, in fact, professes delight with the very early response to the system. He explains that approximately 10,000 people were permitted to experiment with eWorld during a several-month beta period, and about half of those actually tried it for varying amounts of time. At the end of June, however, those accounts still active were notified that in order to continue they would thereafter be billed. Friedman proudly reported to me that "the vast majority" of beta testers who had significantly participated in the shakedown period signed up for the real thing, and in the first few weeks were visiting eWorld for longer periods than Apple had anticipated.

continues

"We have to appeal to the untapped market," Friedman says. "There are 100 million personal computers out there and between 3 and 5 million use online services." (He doesn't mention the 25 million Internet users.) By this reasoning, Friedman feels justified in stating flatly that the real competition for eWorld is not so much America Online, CompuServe, Prodigy, Delphi, and the like, but things like video games and television.

This attitude is reminiscent of the early days of the Macintosh, when marketing director Mike Murray would draw a bell curve on a blackboard, point to the beginning of the upward slope, and say, "That's where we are in personal computers." Then he'd explain why the masses of people that would reside on the summit of the hill would use the Macintosh. He was correct in saying that millions would buy computers, even correct about the need for a graphical interface; but for various reasons (primarily the sort of hubris that assumed the Mac's superiority would sell itself, even at premium prices) it is not the Apple product that the masses use. There is a lesson here for eWorld.

As Murray thought about the Macintosh, Friedman thinks that eWorld will prove so superior that it will win a solid percentage of those bell-curve climbers. The reason there are so few user attractions on eWorld at launch time, he says, is that Apple is taking time to make sure that every attraction is a quality one, consistent with Apple's high standards. Once everything is in place, and features will be added weekly, eWorld will draw in many more people. At first they will be Macintosh and Newton users, attracted by the various discussions, databases, and support services offered by Apple and its third-party community. In 1995, the service will roll out software for Windows users. Friedman concedes that it's not easy to explain why the Windows world would gravitate to a service not only oriented to Macintosh but run by Apple itself. But he believes that eWorld will be sufficiently superior to the alternatives that Windows users will flock to it.

So how will eWorld do this? Can it indeed gain a critical mass, especially when at launch time it charges full freight for a system under construction? (And the starting price is not exactly a loss leader—eWorld costs $8.95 a month, plus $4.95 per hour after the first two hours—with a further $2.95-per-hour surcharge if for some reason you want to use eWorld during the day.) There is its interface, which is very pretty, to be sure, but not really revolutionary. There are the services directed specifically toward Apple users, like databases of arcane bug-fixes, and the presence of third-party companies. But most people don't spend their leisure time seeking answers to computer-support questions. There are the usual assortment of stock prices, magazines, movie reviews, and so on. But other services offer these, currently in greater numbers. And though Apple promises innovation, its competitors are capable of innovation as well.

People Who Need People

Ultimately, the success of a service rests on its people. It is of course essential to sign up a solid number of information features, online magazines, and glittery guest speakers (eWorld should have done so as soon as it began charging its customers full freight), but the most important aspect of computer communications is its two-way nature. And this is where I see continuing problems for eWorld.

First of all, you simply need a sufficient number of people to keep discussions going. Friedman may be correct that most eWorld beta testers have remained on the service, but my unscientific measure of the conferences showed a falloff of comments from the time that Apple began to run the meter. I'll bet that many of the defectors were some of the people new users most wanted to talk to—journalists and celebrities in the Macintosh

continues

"RAM Doubler is the best new software"

Macworld Magazine, 9/94

Everyone needs more RAM. But you've probably been putting off buying more SIMMS because they cost too much and they're a hassle to install. Not anymore. With RAM Doubler™ forget about adding SIMMS—you're one click away from doubling your memory with just software.

RAM Doubler is intelligent memory management. It's a bulletproof extension that works by using patented techniques to reclaim memory. And it comes from the company that brought virtual memory and 32-bit addressing to the Macintosh.

MACUSER

Macworld readers voted RAM Doubler as the "Most Promising Newcomer" in this year's World Class awards. Macworld's editors gave it an Editor's Choice award. In fact, in almost every review of RAM Doubler you'll see praise similar to what MacUser wrote: "may well be the best investment you'll make this year."

But don't take their word for it. Try it yourself. RAM Doubler is only $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.

CONNECTIX

800-950-5880 ext. 270

2600 Campus Drive, San Mateo, CA 94403
415-571-5100 • FAX: 415-571-5195
AppleLink/AOL: CONNECTIX

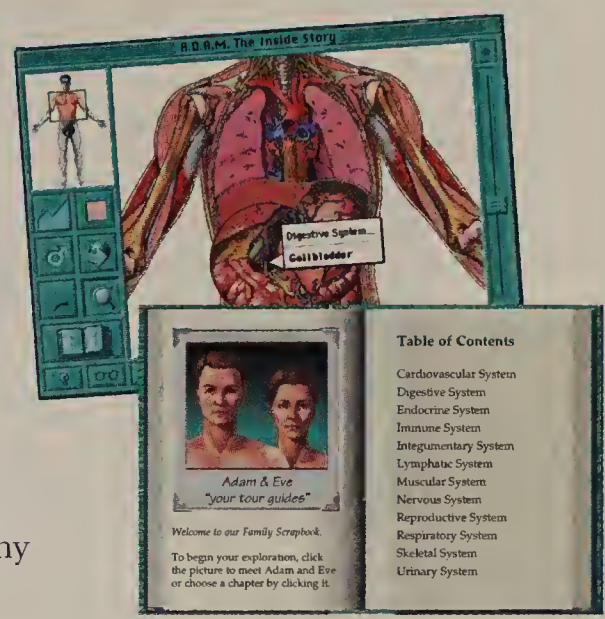
©1994 Connectix Corporation. RAM Doubler requires Mac II (with PMMU) or better (68030, 68040 or PowerPC microprocessor) with 4 MB RAM & System 6 or 7. RAM Doubler is not compatible with Mac LC, Classic, Plus, SE or PowerBook 100. RAM Doubler is a trademark of Connectix. All other trademarks are the property of their respective holders.

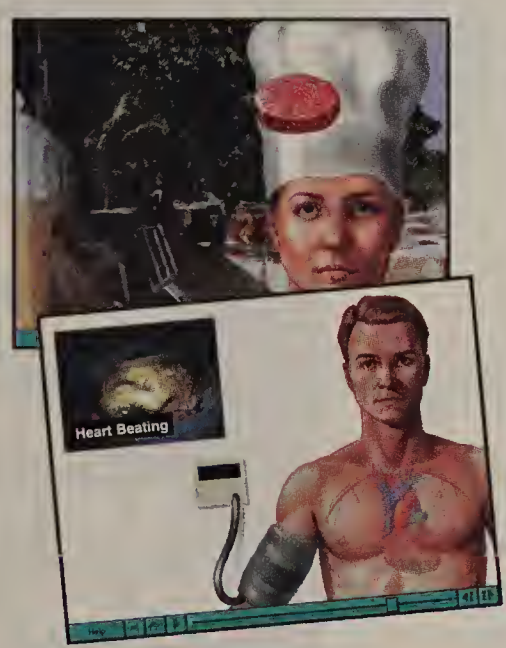
Circle 192 on reader service card

New! CD-ROM for Windows™ and Macintosh®

An Eye-Popping Multimedia Experience!

A.D.A.M. *The Inside Story* is **the first truly interactive multimedia experience** that takes you and your entire family on the greatest adventure ever — into the human body. Explore every detail of the anatomy layer-by-layer, from skin to bone, with **hand-crafted medical illustrations** acclaimed by leading medical schools and universities worldwide. You will quickly discover this is not "just another body CD"...it's what multimedia is all about! That's why A.D.A.M. products have won nearly **every major multimedia award**.





But anatomy is just the beginning! The whole family will be challenged and entertained as modern-day Adam and Eve lead a light-hearted, educational tour through their Family Scrapbook. The miracles of each body system come alive in over **four hours of exciting animations, live action video, and dynamic sound**. There's even expert commentary from Adam and Eve's family physician. And the **interactive multimedia puzzles** are a must!

The Miraculous Way for the Entire Family to Discover the Secrets of the Human Body!

A.D.A.M.®
The Inside Story™

ORDER NOW!

Your Price: $59.95
Regularly: ~~$79.95~~

1-800-408-ADAM Dept. 505
– or –
619-490-8055 Dept. 505

Windows: 386/33 MHz processor, 486 processor recommended; Microsoft Windows 3.1 or higher; 8 MB RAM, SVGA monitor, 265 colors; double speed CD-ROM drive; MPC-compatible sound card.

Macintosh: 68030/16 MHz processor or higher or Power Macintosh in native mode; System 7; 8 MB RAM; 5 MB hard disk space; 9 inch or larger color monitor, 256 colors; double speed CD-ROM.

©1994 A.D.A.M. Software, Inc. A.D.A.M. is a registered trademark and The Inside Story is a trademark of A.D.A.M. Software, Inc. Other trademarks contained herein are trademarks of their respective companies.

Circle 22 on reader service card

community who would have added a bit of glitter to the proceedings.

Worse, the comments on the discussion boards seem desultory. It may well be that in individual conversation, eWorld users communicate with the pith of Dorothy Parker and the authority of Samuel Johnson. But as an aggregation they produce a lackluster bunch of comments. On a service run by Apple one would certainly expect a heated, or at least informed, discussion of issues concerning Apple itself. Nuh-uh. For that you'd be better off going to MAUG, the discussion group on CompuServe that seems to generate more chatter about the Macintosh in an hour than eWorld creates in a week—and a lot of it is inside stuff. (You will never see an Apple staffer, or anyone else, really, dish out hot dirt about his or her employer on eWorld because the service bans anonymity—and is therefore whistle-blower-proof.)

Perhaps the lackluster conversation is a function of eWorld's well-meaning but neo-draconian attempt to rid the service not only of anonymity but also of other practices that are oft abused in electronic communications. It would take more than half my column to list the sorts of things you shouldn't say or do on eWorld. Key sentence: "You are expressly prohibited from posting on eWorld any unlawful, inaccurate, threatening, libelous, obscene, profane, sexually offensive, or objectionable information of any kind, including encouraging use of controlled substances, that would constitute a criminal offense, give rise to civil liability, or otherwise violate any local, state, national, or international law." Objectionable information of any kind? Check, please.

"We're not into censorship or control, just standards," says Friedman. "We're trying to have less random noise, to be more focused."

It's a justifiable approach, but I don't know if it's a competitive one. Despite what anyone at Apple thinks, eWorld's marketplace opponents are not Jerry Seinfeld and Sonic the Hedgehog but every alternative that links a personal computer with a modem. The people who run America Online want the same customers, and they have a head start. CompuServe undoubtedly will improve its look and feel. Delphi offers cheap and deep Internet access, a crucial approach that eWorld is planning to enter only gradually. Some of the ultraliterate local services like The WELL in the Bay Area and ECHO in New York City are planning to expand, opening nodes in many cities. It appears that Microsoft will soon begin its own online service. And literally millions of people are discovering the pleasures of surfing the hypertext-like Mosaic software on the Internet.

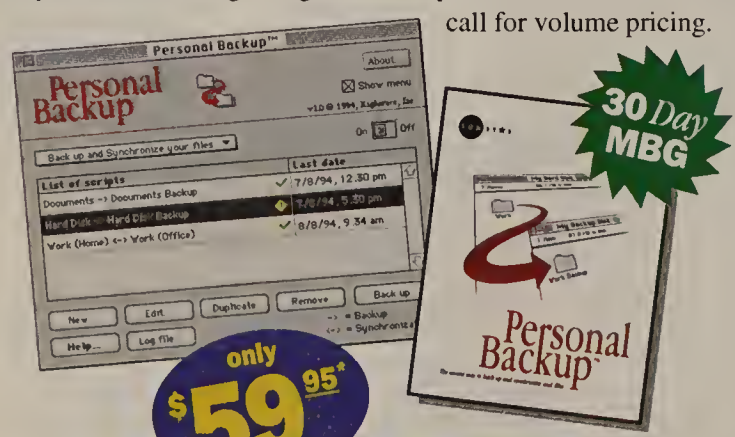
That is simply the market reality. For too many years, Apple Computer has frittered away its technological lead by not taking the necessary steps to make its products absolutely irresistible. Believing it had superior products, the company felt no need to take painful measures such as price-cutting. I see the same mistake being made with eWorld, a promising system introduced rather late in the game. Instead of waiting for the world to find it, Apple should be playing a pocket-draining round of catch-up. This means dirt-cheap prices (particularly in these empty opening days), an aggressive effort to recruit gregarious and/or famous participants, a more concerted effort to eliminate those hard hats, a less scary subscriber agreement, and a full range of easy-to-use Internet connections.

Cyberspace is not for the timid. While eWorld carefully ramps up, everyone else is recklessly racing up the same incline like Evel Knievel on a motorcycle. Dramatic measures are called for. If Apple doesn't heed the call, all it will be left with is an empty world. m

STEVEN LEVY's latest book is *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (Viking, 1994).

Backup & Synchronize!

Personal Backup is the world's easiest way to backup or synchronize your files. Simple, effortless and elegant, this control panel allows you to execute **simple back up scripts** at scheduled times, or in the background. Taking up less than 500k of disk space, this is the most **complete solution** to gaining control of your data. Available now, call for volume pricing.



only $59.95*

ORDER NOW!

(800)660-4480

or see your local reatailer

Fax: 203/785-8001
International: 203/785-8111

SUNSTAR

©1994 SunStar Publishing 277 Chapel Street, Suite 4A, New Haven, CT 06513 203/785-8111 Fax: 203/785-8001
All trademarks or registered trademarks are the property of their respective owners. *Plus shipping and handling.

Circle 246 on reader service card

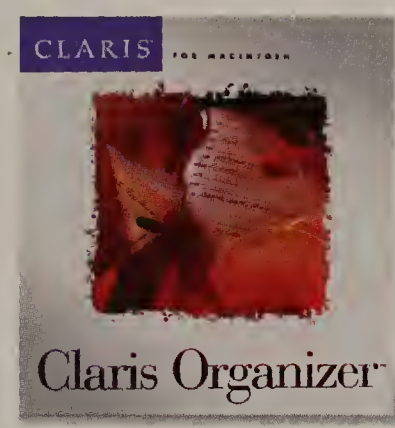
COPY SOFTWARE ILLEGALLY AND YOU COULD GET THIS HARDWARE ABSOLUTELY FREE.

Software piracy isn't just a crime. It's a shame. Because most people who do it aren't even aware that it's illegal. If you copy software that's protected by copyright, you could lose your job, face a civil suit, pay a $100,000 fine and possibly be imprisoned. So get the facts now. To request more information, contact the Software Publisher's Association at 1-800-955-7721. Because in a court of law, ignorance is one thing you won't be able to plead.

SPA

Don't Copy That Floppy

Out of chaos comes order.



*Special offer!**
$49
To order, call
1 800 544 8554
ext. 200
30-day money-back guarantee!

Order now.

Claris Organizer. The first P.I.M. that's got it all together.

If you've tried to use your computer to get organized, you know that most personal information managers (PIMs) do one or two things well. But the things they do, aren't well integrated. Until now.

New Claris Organizer™ software is the first program to seamlessly integrate four PIM environments into a single easy-to-use intelligent application.

Claris Organizer is the first PIM that's fully integrated and intelligent. Everything's accessible from one floating push button palette.

- *Calendar* – appointments and tasks displayed in customizable daily, weekly and monthly views.
- *Contacts* – a powerful database that handles all your contact information—easily sortable by name, zip code, company, etc.
- *Tasks* – manage all to-do items, including recurring tasks.
- *Notes* – the flexible way to write, categorize, search, and sort your notes and memos.

With its breakthrough intelligent assistance, all your calendar entries, notes, to-do lists, phone numbers and addresses can be automatically linked—putting everything at your fingertips, from anywhere in the program. Plus, a Smart Search feature finds what you're looking for just by typing phrases in plain English.

Combine its integration and intelligence with the ability to print in many formats, including DayRunner, Filofax and Avery labels, and you have the ultimate personal organizer for Macintosh computer users. At a compact 800K, it's perfect for all PowerBook or desktop Macintosh computers†

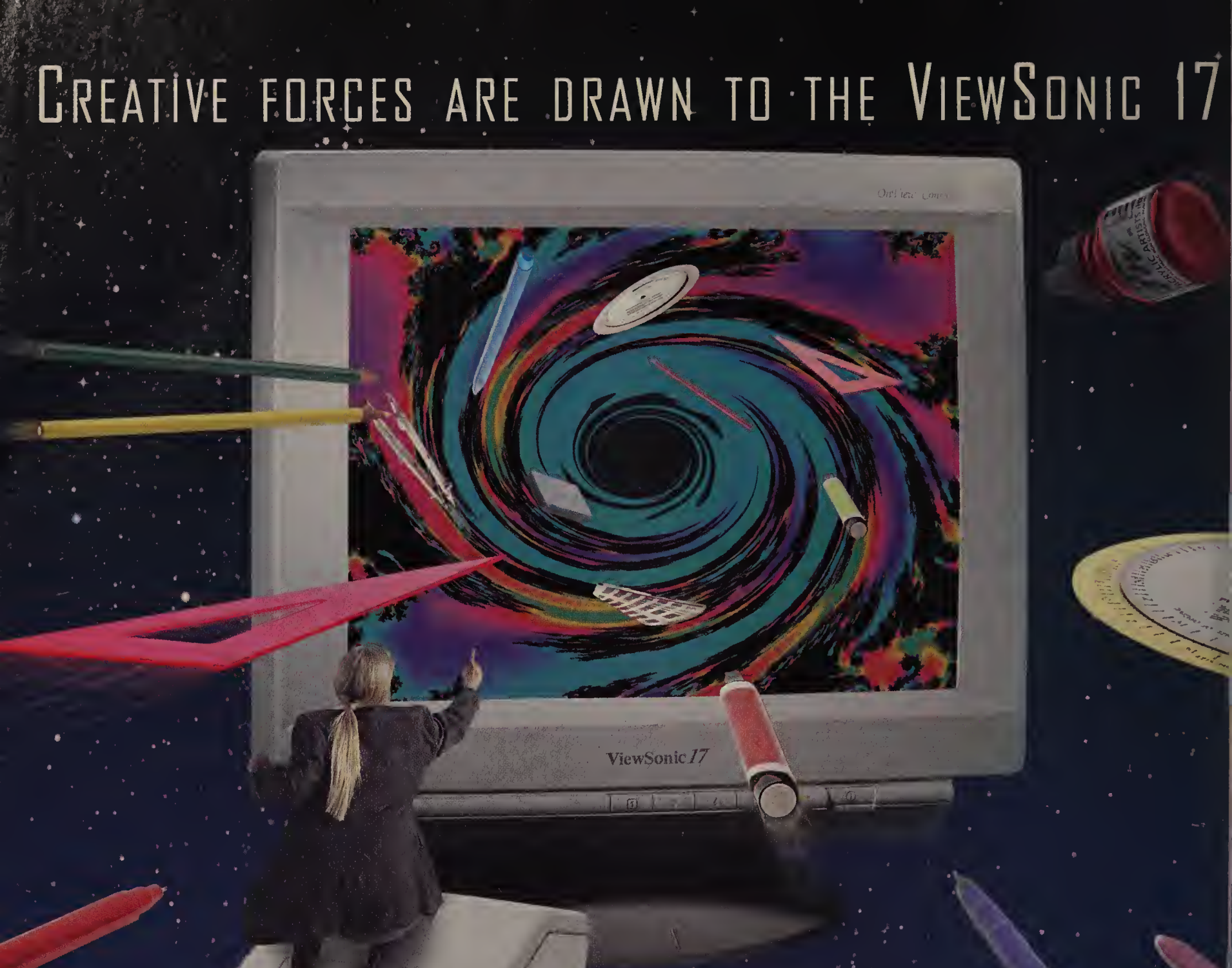
Want a PIM that's smart enough to really simplify your life? Order Claris Organizer. It'll bring order to the chaos, fast.

CLARIS®

Simply powerful software.™

*Try new Claris Organizer risk-free for 30 days. Price and money back guarantee offer good only in the U.S., from Claris, and is subject to change. Shipping and handling costs are additional. Price offer not good with any other discounts or promotions. Offer good through October 31, 1994. Reseller prices and terms may vary. †Requires System 7.0 or higher. ©1994 Claris Corporation. All Rights Reserved. Claris, Claris Organizer, and Simply powerful software are trademarks of Claris Corporation. Macintosh and PowerBook are registered trademarks of Apple Computer, Inc. DayRunner, Filofax and Avery are trademarks of their respective manufacturers.

CREATIVE FORCES ARE DRAWN TO THE VIEWSONIC 17



Your mind's eye visualizes the finished work and you are drawn to the screen of the **new** ViewSonic 17. This is where perfection is found. The image on the screen is vital to you — not all monitors are created equal. That's why we developed the New Generation ViewSonic 17 color monitor. There is a difference!

The revolutionary super dark screen of the ViewSonic 17 is designed to increase contrast and produce pure, sharp colors. In addition to a vivid, luminescent image, our digitally controlled 17" monitor offers ViewMatch,™ a color control system designed to accurately match the screen to printer output. To customize settings, such as screen size or pincushioning, there is OnView,™ an easy-to-use array of on-screen adjustments. And the monitor supports non-interlaced resolutions up to 1,600 x 1,200 pixels.

The ViewSonic 17 is even equipped with BNC connectors, which allows two systems to be attached to the monitor at the same time. As a matter of fact, the entire line of ViewSonic's 15- through 21-inch New Generation monitors is MAC and PC compatible, and meet Swedish MPR-II standards for low radiation.

Unleash your creative forces with the new ViewSonic 17 ... and See The Difference!

20480 Business Parkway Walnut, CA 91789
Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958

17" CRT's yield 15.5" to 15.7" diagonal viewable screens.
All products and brand names are registered trademarks of their respective companies.

ViewSonic
See The Difference!™

Circle 237 on reader service card

CONSPICUOUS CONSUMER

BY DEBORAH BRANSCUM

Authorized Macs by Mail

Apple changes its sales strategy—but does it offer enough choices?

EARLIER THIS YEAR APPLE announced a change in the way it sells computers. It now allows qualifying Apple dealers to sell Macintosh products by catalog. Apple also authorized a small number of mail-order-only companies to sell PowerBooks, Apple peripherals, and supplies. The company established the Apple Business Direct Program (800/462-7753), which sells Apple products directly to small-business customers. And in August Apple announced that traditional computer dealers will now sell Performas, the all-in-one computer-and-software bundles that were previously sold only by large retailers such as Sears and Circuit City.

These changes mean that consumers have more ways than ever to buy a Macintosh. Finally they can buy Macintoshes by mail through authorized dealers. Apple currently allows only dealers with stores to sell its entire product line by catalog; mail-order firms without stores are not permitted to sell desktop systems—at least not yet. The company says it plans to assess its mail-order program by October; it's possible that at that time it will allow mail-order-only stores to sell its full line.

Dealers versus Mail Order

Apple's mail-order effort is an attempt to broaden its sales channels without alienating the traditional computer dealers who are responsible for many of the Macintoshes sold. But it may be impossible to give consumers more choice without angering at least some dealers.

"I'd rather not have mail order authorized at all," says one Apple-authorized dealer, who asked not to be identified. "We go to the trouble and expense of leasing a storefront and getting demonstration machines. Mail-order companies have a financial advantage."

The dealer may go into catalog sales "as a defensive move," he says, adding that he fears that if Apple authorizes major mail-order companies to sell its full line, prices may fall so low that only businesses located in low-cost rural areas can survive. Moreover, he believes the success of Apple's push to gain market share is dependent on storefront dealers.

"What I think a consumer has to understand—and what's hard to understand because it goes against your pocketbook," says the dealer, "is that if you want to see a computer and touch it and see a demo and talk to someone knowledgeable . . . you need a store. And that costs money—not a lot more than mail order, but a percent or two." But this perspective isn't universal. While some dealers share his concerns, others say Apple will not win more market share unless it opens up all channels.

"I believe that channel expansion does grow the market and brings more people to this industry and to these products than not," says Alex Peder, executive vice president of Ballard Computer in Seattle. "I believe we are dealing with discretionary dollars, dollars that might be spent on a car or a vacation [instead of a computer]. To the degree that authorizing catalog companies to distribute the full line broadens the market, I'm all for that."

The Apple List

Many *Macworld* readers prefer buying both hardware and software by mail. So it's good news that you can buy Apple's product line from authorized dealers. The bad news is that buying a desktop Mac through the mail from an authorized dealer may not be as easy as buying a PowerBook from a company like MacWarehouse or MacConnection. Many of Apple's catalogers are not experienced mail-order firms but rather are resellers just beginning catalog sales or expanding regional catalogs. So some of the benefits associated with mail order—such as seven-day ordering, inexpensive shipping, and overnight delivery—may not be offered by all Apple catalog resellers. At the same time, authorized catalog companies may decide to offer services that traditional mail-order firms don't, such as out-of-warranty repair services by mail.

Several Apple dealers say they participate or plan to participate in catalog sales to individuals; these include Computer Town (800/666-0004) of Boston; Computize of Houston through its Syex Express division (800/289-7939); Computerware (800/326-0092) of Palo Alto, California; Crutchfield Corporation (800/955-9009) of Charlottesville, Virginia; Elektek (800/395-1000) of Skokie, Illinois; J & R Computer World (800/221-8180) of New York City; New MMI Corporation of Williamsport, Pennsylvania (800/221-4283); Oakbrook Computer of Oakbrook, Illinois, through its Technology Now division (800/566-9622); and Vanstar Corporation of Pleasanton, California, through its Computers 800 division (800/321-1234).

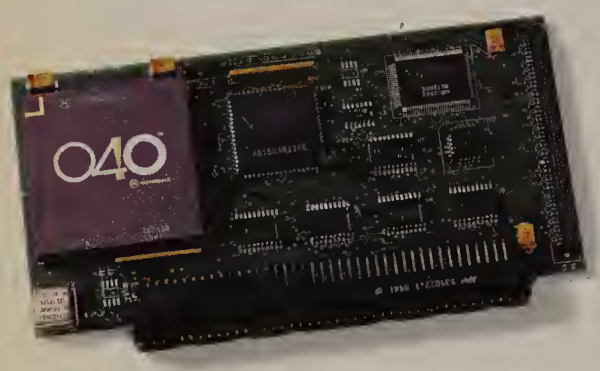
Currently at least two existing mail-order companies sell Apple's full line of products. Club Mac (800/258-2622), owned by Pacific Business Systems of Irvine, California, and Creative Computers' MacMall (800/222-2808) of Torrance, California, are owned by different Apple dealers that have been approved for catalog sales, so both carry desktop Macs as well as other Apple products.

continues

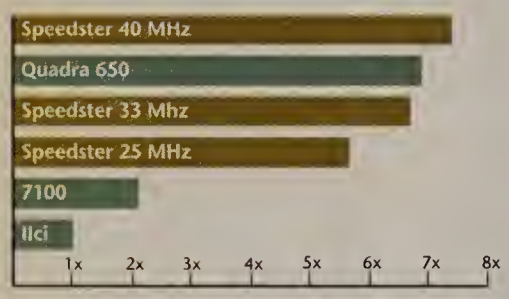
FREE CACHE!
On all 33 and 40 MHz Speedster 040 Accelerators

040
Performance
Now only
$349.

Just plug in the Mobius Speedster '040 accelerator and instantly get blazing performance from your existing Macintosh. It's the smartest, fastest, most economical way to get a hot new Mac without buying one.



Universal PDS design supports the Mac IIci, IIsi, IIx, IIcx and LC with 100% compatibility or your money back.



Get an instant speed boost and outperform Apple's Power Macs in emulation mode.

Watch Photoshop resize 4 times faster, Illustrator redraw 7 times faster, Excel recalcute 6 times faster or Word replace 5 times faster–everything screems.

	25MHz	33MHz (FREE 128K CACHE!)	40MHz
Speedster '040	$349	$499	
Speedster '040 w/FPU	$449	$649	$899

Save up to 40% over the competition, plus get a 3-year warranty, 30 day money-back guarantee, and toll-free support rated "Excellent" by MacWorld. Call today to place an order or get more info.

MOBIUS
TECHNOLOGIES • INC

CALL 800-800-4334
Circle 109 on reader service card

The five mail-order-only companies authorized to sell selected PowerBook models, peripherals, and supplies are Computer Discount Warehouse (800/509-4239) of Buffalo Grove, Illinois; MacWarehouse (800/255-6227) of Norwalk, Connecticut; MacZone (800/684-8080) of Bellevue, Washington; Egghead Software–owned Mac's Place (406/758-8000) of Kalispell, Montana; and Tiger-Software (800/666-2562) of Coral Gables, Florida.

Authorized versus Gray Market

For mail-order Macs, consumers can now choose from different types of Apple dealers and so-called gray-market companies. Unlike authorized dealers, gray-market companies have no direct relationship with Apple and have not agreed to abide by specific Apple regulations in order to buy products directly from Apple for resale. As a result, authorized Apple dealers like to paint gray-market companies as outlaws—although the gray market is not illegal—and point out the low investment required to begin a mail-order business. Gray-marketeers, on the other hand, suggest authorized dealers have limited inventory, experience, and expertise.

Neither stereotype is entirely true or entirely false. A dealer's direct relationship with Apple can certainly be an advantage to consumers. "We have direct support from Apple, including technical support," says Sam Ryu, president of the Computize chain in Houston. If consumers have a problem with Computize, "since we value our authorization, they can directly complain to Apple, and Apple can have a direct handle on us by telling us to fix it." In contrast, says Ryu, "Apple doesn't have any influence on the gray-marketeer, so the customer has to rely on the goodwill of the gray-marketeer."

Moreover, as the mail-order industry consolidates, Apple's approval implies some level of review. That's usually difficult for consumers to do on their own but can be especially important on the mail-order side, where it's easy for individuals to go into business and sometimes even easier for them to go out of business.

On the plus side, because they don't buy inventory directly from Apple but rather from a broad range of authorized dealers, gray-marketeers may be able to get new machines that are not widely available through authorized dealers. David Goldman, president of Austin, Texas–based Bottom Line Distribution, says his company has an edge over Apple-authorized dealers because of its custom configurations and technical support. "Our solution to a conflict with a CD-ROM drive is not just to tell the customer to send us the CD-ROM drive and we'll replace it, because typically that's not the problem. . . . There's really a difference between offering solutions and selling products."

Other industry folks agree that a company's authorization doesn't automatically translate into a buyer's good mail-order experience, because retail sales and mail-order sales are very different businesses. "The fact that Apple has authorized a dealer doesn't necessarily mean it can provide good sales, technical support, and customer service by mail and over the telephone," says Mike McNeil, president of Club Mac, an authorized Apple cataloger.

All mail-order companies are not equal. Large, experienced gray-market companies may do an excellent job and provide better service than authorized dealers that are new to catalog sales. Even so, a fair number of *Macworld* readers get burned each year by unscrupulous, unauthorized mail-order companies. Apple's authorization will not guarantee a good experience, but it may offer some leverage if a company treats you badly. If that's important to you, buy from authorized dealers. (Call 800/538-9696 for verification.) Since you may not be able to depend on Apple for prompt technical support (I recently spent 33 minutes on hold), check out any dealer's support before you buy. And no matter where you buy, always use a credit card so you can dispute the charge if necessary.

Back to the Future

Alex Peder predicts that mail-order companies such MacWarehouse, MacConnection, and MacZone will eventually be authorized to sell the full Apple product line. "Broadening their channel strategy gives Apple greater market share," says Peder.

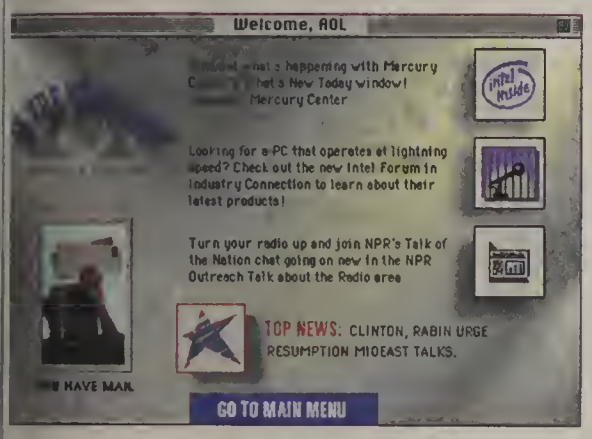
Consumers stand to benefit if Apple expands full authorization to established mail-order companies that can handle high-volume sales effectively and professionally. Ironically, though, Apple's tentative foray into mail order may have boosted the fortunes of gray-market companies as much as its own dealers'.

"People used to call up and ask, 'Is this gray market? Will I go to jail over this?'" according to Goldman. "Today, there's not the hesitation to buy mail order anymore, because Apple has said it's OK to buy by mail." m

Send nominees for sainthood to *Service Heroes, Macworld*, 501 Second St., San Francisco, CA 94107, or via the Internet (Branscum@AOL.com). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.

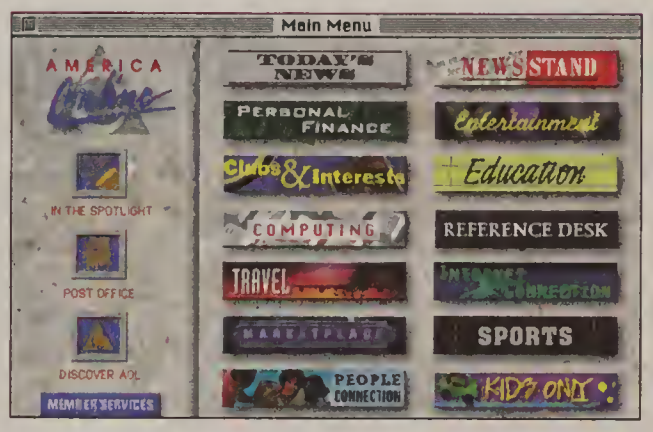
Fasten Your Seatbelt!

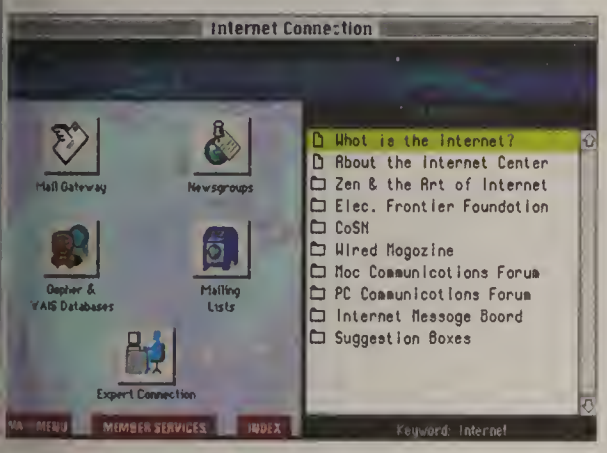
America Online's New Software Makes The Information Superhighway A Whole New Ride.

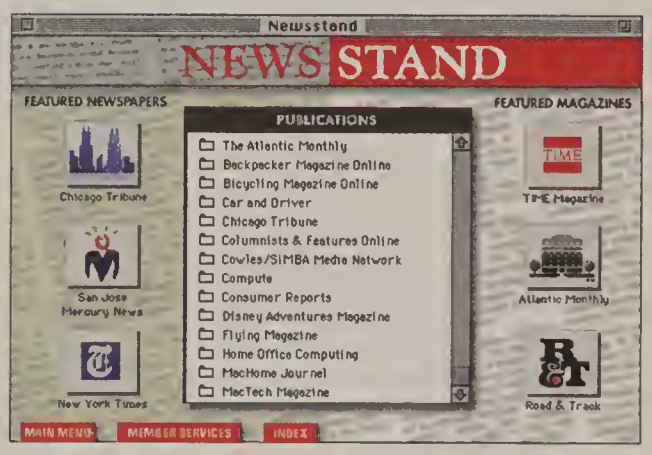


Enjoy the new scenery on America Online's information superhighway. There are colorful graphics, exciting new departments, a built-in graphics viewer, and more—to keep your online trip as visually stimulating as it is informative!

- A new main menu featuring 14 departments lets you find exactly what you're looking for—quickly and easily.
- Each department is indexed to make your trip faster and more efficient.
- A built-in graphics viewer displays compelling images and photos.
- Our exclusive Internet Connection is easy to navigate and there are no surcharges.







Try It Free!

To See The New Sights, Turn The Page

Featuring Macworld Online!

Experience it for yourself. We'll give you ten free hours so you can explore all the new services of America Online.

Return the business reply card or fax it to 1-800-827-4595. Or call 1-800-827-6364, Ext. 4700, today and we'll send you a free starter kit.

If you're a current member of America Online, your free upgrade kit is already on its way!

Yes! I'd like to try America Online—FREE.

Send me the free software and trial membership. I understand there's no risk—if I'm not completely satisfied, I may cancel without further obligation.

NAME _____

ADDRESS _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

HOME PHONE _____

SELECT DISK TYPE AND SIZE:

Windows*: ❑ 3.5

DOS: ❑ 3.5 ❑ 5.25 ❑ High Density ❑ Low Density

Apple® ❑ Macintosh® 3.5

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor, a mouse, a modem, and a working copy of Windows 3.1

Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.

04700/M

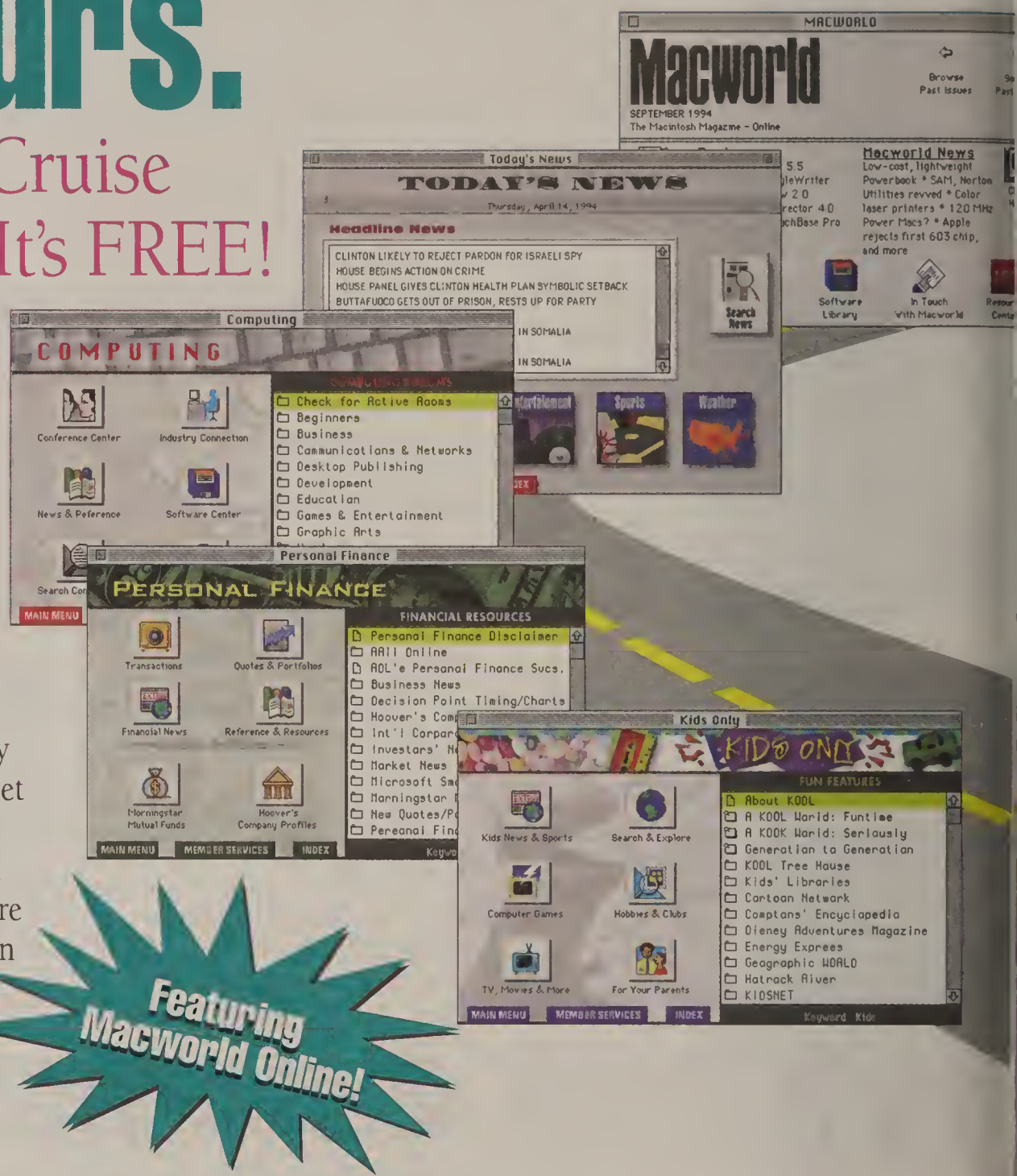
Try America Online For Ten Hours.

It's As Easy As Cruise Control—And It's FREE!

You'll find areas of interest for cyberspacers, small business owners, parents, news junkies and sports nuts, shoppers, traders, travelers, hobbyists, students...everyone. Plus, enjoy Macworld Online with weekly conferences, hot topics and industry names, the latest product reviews, and more!

Join the information superhighway travelers on America Online and get unlimited e-mail, leading news publications, personal finance and travel-planning resources, and more than 100,000 software files you can download easily. Have fun, enjoy the ride...

and don't forget to fasten your seatbelt!



Featuring Macworld Online!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 8567 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

AMERICA Online®

8619 Westwood Center Drive
Vienna, VA 22182-9806

Keep The Traffi Flowing And The Ride Fun–

Simply mail this card, or fax it to 1-800-827-4595. Or call 1-800-827-6364, Ext. 4700, to order your free starter kit today!

AMERICA Online®

Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Elizabeth Maffly

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in *Macworld*'s comparative articles. A ✣ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

Hardware

MONITORS

BLACK-AND-WHITE MONITORS, May 93

Portrait monitor: 15-Inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.

Two-page monitor: ✣ L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. ✣ MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699, with video-display board $798.

SMALL COLOR MONITORS, Jan 94

14-inch display: ✣ Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95. ✣ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; $799.

15-inch display: NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; estimated street price $755.

TWO-PAGE COLOR MONITORS, Nov 94

PressView 21 Display System; SuperMac Technology, 408/541-6100; $3999.

NETWORK HARDWARE

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

REMOTE-ACCESS SERVERS, Oct 94

Mixed networks: NetConnect Remote Access Server; Asanté Technologies, 408/435-8401; $3899 for eight ports.

AppleTalk networks: ARA Multiport Server; Apple Computer, 408/996-1010; four ports $1799, eight ports $3298.

PRINTERS

COLOR PRINTERS, Aug 94

Low-end ink-jet: DeskWriter 560C; Hewlett-Packard, 800/752-0900; $719.

Solid ink-jet: Phaser 300i; Tektronix, 503/682-7377; $9995.

Thermal-wax transfer and color laser: Phaser 220i; Tektronix, 503/682-7377, $5995.

DYE-SUBLIMATION PRINTERS, Jul 94

Prepress proofing—tabloid size/fastest: Phaser 480; Tektronix, 503/682-7377; $14,995.

Prepress proofing—tabloid size/most complete: Rainbow; 3M, 612/733-1110; estimated street price of $20,000.

Prepress proofing—letter size: ProofPositive Full Page; SuperMac Technology, 408/541-6100; $7999.

General publishing and business: Phaser IISDX; Tektronix, 503/682-7377; $9995.

PERSONAL PRINTERS, Sep 94

Ink-Jet: DeskWriter 520; Hewlett-Packard, 800/752-0900; $365.

Laser—$1000 to $1600: microLaser Pro 600; Texas Instruments, 214/995-6611; $1599.

WORKGROUP PRINTERS, Feb 94

High-speed: Hewlett-Packard 4Si MX; Hewlett-Packard, 800/752-0900; $5499.

Best buy: ✣ Apple LaserWriter Pro 630; Apple Computer, 408/996-1010; $2529. ✣ Hewlett-Packard LaserJet 4M; Hewlett-Packard, 800/752-0900; $2329.

SCANNERS/IMAGE CAPTURE

ELECTRONIC CAMERAS, Sep 94

Apple QuickTake 100; Apple Computer, 408/996-1010; $749. ◀

LOW-COST COLOR SCANNERS, Nov 93

$1300 to $1600: ✣ La Cie Silverscanner II; La Cie, 503/520-9000; $1599.

✣ Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.

Under $1300: Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

OCR, Nov 93

OmniPage Professional; Caere Corp., 408/395-7000; $995. ◀

SYSTEMS/STORAGE

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

Sheer speed: Pioneer DRM-604X; Pioneer, 800/444-6784; $1495.

Overall value: AppleCD 300; Apple Computer, 408/996-1010; $599.

Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: ✣ Nova XL 2700; Microtech International, 203/468-6223; $2999. ✣ Vista 3.5GB; Relax Technology, 510/471-6112; $3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; $499.

MACINTOSH UPGRADES, Jun 93

SE accelerator (25MHz): Quik30; Novy Systems, 904/427-2358; $449 (without FPU).

SE/30 accelerator (50MHz or 33MHz): Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).

LC and LC II upgrades: Macintosh LC III Logic Board Upgrade; Apple Computer, 408/996-1010; $599.

Mac II accelerators: ✣ Radius Rocket 25i, Radius Rocket 33; Radius, 408/434-1010; 25i $1199, 33 $2499.

✣ Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.

IIfx SCSI accelerator: QuickSCSI; PLI, 800/288-8754; $499.

Quadra static-RAM cache card: FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

OPTICAL DRIVES, Dec 93

3½-inch: ✣ Epson OMD 5010; ClubMac, 800/258-2622; $959.

✣ 128 MO; APS Technologies, 800/874-1428; $899.

5¼-inch: ✣ Sharp JY-750; ClubMac, 800/258-2622; $1829.

✣ Infinity MaxOptical 11m; Peripheral Land Inc., 800/288-8754; $4113.

PC COPROCESSING, Oct 94

OrangePC Model 210; Orange Micro, 714/779-2772; $1283.

VIDEO/DISPLAY

24-BIT VIDEO CARDS, Apr 94

Inexpensive acceleration: PrecisionColorPro 24XP; Radius, 408/434-1010; $599.

Full-featured acceleration: Thunder II GX•1360; SuperMac Technology, 408/541-6100; $4499.

HIGH-END VIDEO EDITING, Jun 94

Presentation video: ✣ MoviePak2 Pro Suite; RasterOps, 801/785-5750; $4199. ✣ VideoVision Studio; Radius, 408/434-1010; $4499.

Corporate video (offline): Media Composer 400s; Avid Technology, 508/640-6789; $14,995.

Corporate video (online): VideoCube; ImMix, 916/272-9800; $40,500.

continues

MACWORLD Editors' Choice

PHOTOSHOP ACCELERATORS, Apr 94
PhotoBooster; Radius, 408/434-1010; $999.

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-business system: M.Y.O.B.; Teleware, 201/586-2200; $199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9527; $119.95.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $595.
Comprehensive package: SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

CD-ROM

TOP 10 CD-ROMS, Mar 94
Overall: Seven Days in August; Time Warner Interactive Group, 818/955-9999; $79.99.

COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
Basic connectivity: ZTerm; David P. Alverson (no phone number available); $30.
Terminal emulation: Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
Internet exploration: VersaTerm; Synergy Software, 215/779-0522; $125.

DOS WINDOWS EMULATION, Oct 94
Timbuktu Pro 1.0.3 for Macintosh, Timbuktu 1.1 for Windows; Farallon Computing, 510/814-5000; $199 each.

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $79.

NETWARE CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-7900; $795.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

GRAPHICS

3-D DESIGN, Aug 93
Price for performance: ✣ Ray Dream Designer 2.0.4; Ray Dream, 415/960-0765; $299. ✣ Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
All-in-one solution: ✣ Infini-D 2.5; Specular International, 413/253-3100; $695. ✣ StrataVision 3D 2.6.1; Strata, 801/628-5218; $995.

CLIP ART'S GREATEST HITS, Jan 94
Overall collection: ✣ ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume. ✣ Electronic Clipper subscription service; Dynamic Graphics, 800/255-8800; $67.50 per month. ✣ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95. ✣ Images with Impact series; 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $499. ✣ Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
Budget draw: Expert Draw; Expert Software, 305/567-9990; $49.95.
Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; $79.
Beginners' program: Aldus SuperPaint; Aldus Corp., 619/558-6000; $149.95.
Overall: Canvas; Deneba Software, 305/596-5644; $399.

FONT BUYERS' GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400, 800/682-3623; $99 (includes the ability to unlock two families from preselected packages) plus $25 to unlock individual faces or $69 to $179 for unlocking families.
Display/decorative-face collection: Fontek; Letraset, 201/845-6100; $39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
✣ Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295.
✣ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
Budget buy: Expert Color Paint; Expert Software, 305/567-9990; $49.95.
Overall program: Fractal Design Painter; Fractal Design Corp., 408/688-8800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks; Claris Corporation, 408/727-8227; $299.

Vendors: Please write to *Macworld Editors' Choice*, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

ONLINE SERVICES

ONLINE SERVICES, Aug 94
E-mail: America Online; America Online, 703/893-6288, basic monthly fee $9.95.
Reference: CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee $8.95.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: ✣ First Things First; Visionary Software, 503/246-6200; $79.95.
✣ Smart Alarms Plus; JAM Software, 203/630-0055; $75.
All-around scheduler: Now Up-to-Date; Now Software, 503/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; $195.

SALES-AUTOMATION SOFTWARE, Oct 93
✣ Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495. ✣ CBS; Colleague Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiuser system: Personal Librarian; Personal Library Software, 301/990-1155; $995.

PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Aldus Corp., 206/622-5500; $495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/598-3821; $189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; Datawatch, 919/549-0711; $99.95.
Free software: Disinfectant; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
Virtual memory software: Virtual 3.0; Connectix Corp., 415/571-5100; $99.
Memory-boosting software: RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; $99. m

MAC & PC

THE WORLD'S LEADING PHOTO CD-ROM COLLECTION

HUNDREDS OF USES

Project your messages quickly and effectively with photographs. *They will add flair and value to all your communications.*

Also Great as SCREEN SAVERS

ROYALTY FREE

All Corel Professional Photos are royalty free. Corel has ensured that *all images are photographer as well as model released.* Once you purchase a Corel Professional Photos title you are free to use the images as often as you wish; there are no additional fees.

QUALITY

All Corel Professional Photos are shot by professional photographers. *Each image is carefully scanned using the Kodak Photo CD process,* and is available in 5 resolutions. With digital photographs, modifying and editing is so much faster and easier.

OWNERSHIP

For less than 25¢ an image you will have your own personal library of photos. Being on CD-ROM the images are resistant to damage and the effects of time. You'll have them forever!

Each CD-ROM includes: Image management software • Printed reference guide • Screen saver utilities

OVER 200 TITLES TO CHOOSE FROM!

20 new titles every month! Volume sets also available.
100 stunning photographs on each CD-ROM.

$19.95* EACH

1-800-591-0010

* US$ plus applicable taxes.

KUR-0072

ALSO AVAILABLE

ADD FLAIR TO YOUR WORD PROCESSING AND PRESENTATIONS!

- A choice of more than 10,000 clipart images from over 50 exciting categories
- Select a full or partial image and preview your choice
- "Cut and paste" your image to place it exactly where you want it
- Works with all word processing, presentation and DTP packages that support the PICT format

COREL GALLERY FOR MACINTOSH

Enter the Corel $2,000,000 World Design Contest and win! (September to March)
To receive a faxed copy of the contest rules and an entry form please call: 1-613-728-0826 ext. 3080, Document # 1004.
To leave a message please call: 1-613-728-0826 ext. 1609.

Circle 78 on reader service card

NEW SOFTWINDOWS FOR MACINTOSH. IT'S LIKE HO HO HO FOR YOUR 040.

WHEN YOU CAN RUN THOUSANDS OF WINDOWS APPLICATIONS ON YOUR 68040 MACINTOSH, EVERY DAY FEELS LIKE CHRISTMAS.

Did you know you could open a new Windows program every day for 50 years, and still not run all the applications you can run with new SoftWindows for Macintosh? Isn't it a wonderful life?

New SoftWindows for Macintosh is a breakthrough in Windows convenience and accessibility on your 040 Quadra, Centris, Performa, LC or new generation PowerBook. Just like the Power Macintosh version you've been hearing so much about, it's 100% guaranteed to run all your standard-mode Lotus 1-2-3 spreadsheets, dBase IV custom databases, company e-mail, Novell NetWare client software and a whole lot more. All without giving up the Mac you love.

MICROSOFT® WINDOWS™ COMPATIBLE

Includes Microsoft Windows 3.1, MS-DOS 6.21 And NetWare Client Software.

But the real happy ending to this story is that new SoftWindows for Macintosh now runs Windows faster than ever on your 040 Mac. In fact, up to 30% faster!

So open a world of Windows possibilities with new SoftWindows for Macintosh. With more speed than ever and applications up the chimney, it could be the best gift you give yourself all year.

See Your Dealer To Try New, Faster SoftWindows For Macintosh. Or Call 1-800-848-7677 Code SC. For Fax-Back Info Call 1-800-876-3872.

INSIGNIA SOLUTIONS

© 1994, Insignia Solutions, Mountain View, CA Phone: 415/694-7600 Fax: 415/964-5434. Insignia and Insignia Solutions are registered trademarks of Insignia Solutions. SoftWindows is a trademark used under license. Windows is a trademark and MS-DOS is a registered trademark of Microsoft Corporation. All other trademarks are the property of their respective holders.

Circle 68 on reader service card

Star Ratings

HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

Macworld Star Ratings lets you compare hardware and software products for the Macintosh by providing summaries of *Macworld*'s authoritative product reviews from the past year. The number of stars at the beginning of each capsule review indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The ◀ symbol indicates that a product is available in a native Power Mac version, although unless stated otherwise the version we reviewed was the 680X0 version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

Software

BUSINESS TOOLS

★★★ **4D First 1.0 (1.0.1), ACI US, 408/252-4444, $295.** This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-fledged 4D. May 94

★★★ **AccuZip6 1.8.7, Software Publishers, 800/233-0555, $689.** Bulk-mail software has informative progress indicators, batch and individual processing, low rates, and flexible parsing during import, but the interface is incomprehensible. Sep 94

★★ **BaseMap 1.0.1, GeoPoint, 415/957-1560, $149.** For simple maps displaying simple data, this map-making tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. May 94

★★ **Bulk Mailer CASS 1.00d, Satori Software, 206/443-0765, $150.** Unattended operation is possible with this inexpensive bulk-mail software, but batch processing is slow and the program has coding problems. Sep 94

★★★★ **ClarisImpact 1.0 (1.0 v3), Claris Corp., 408/727-8227, $399.** Business graphing, project management, object-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. Jun 94 ◀

★★★ **Cricket Graph III 1.5 (1.52), Computer Associates International, 516/342-6000, $129.** Basic and foolproof charting program produces cleaner charts than Excel with little effort, although its feature set is fairly modest. Apr 94

★★★★ **Crystal Ball 3.0, Decisioneering, 303/449-5177, $295.** Compact business-simulation software is fast enough for complex projects and can pay for itself in disaster-avoidance in a large variety of common business tasks. Oct 94

★★★★ **DeltaGraph Pro 3 (3.5), DeltaPoint, 408/648-4000, $195.** At its new lower price, this charting program is the best feature-for-feature value in Macintosh charting. There's even a new Chart Advisor function that suggests the appropriate display for your data. Apr 94 ◀

★★★ **Extend+BPR 3.0, Imagine That, 408/365-0305, $990.** Business-modeling software includes a superior set of templates for business-process re-engineering, but it requires more than icon-based programming knowledge. Oct 94

★★★ **FastTrack Schedule 2.1, AEC Software, 703/450-1980, $279.** Simple project-management software is ideal for managers who must quickly put together a schedule, but if you require more power to manage conflicts between multiple projects and resource allocation, you'll need a more comprehensive program. Sep 94

★★★★ **Helix Express 2.0.1 (2.0.4), Helix Technologies, 708/465-0242, $589.** Icon-based relational-database software's improved performance makes it a serious competitor for all-Mac networks. Especially notable is its much faster speed; multiuser operation is downright snappy. Jul 94

★★★ **Helix Tracker 1.0, Helix Technologies, 708/465-0242, $439.** Well-designed workgroup-document manager has strong audit and annotation features. For large documents, however, Ethernet will look mighty attractive. Nov 93

★★★ **Map II 1.5, ThinkSpace, 519/858-5047, $395.** Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. May 94

★★★ **Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, $695.** When you require cross-project resource sharing and leveling for a reasonable price, this project-management software has the edge. Nov 93

★★★★ **Microsoft FoxPro for Macintosh 2.5 (2.6), Microsoft Corp., 206/882-8080, $495.** Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data (hundreds of thousands to millions of records) it offers excellent performance. Apr 94

★★★ **Office Tracker 1.1, Milum Corp., 512/327-2255, $195 to $995.** The efficient user interface of this software sign-out board makes it easy to learn and use; but it has some minor flaws. Dec 93

★★★★ **Pablo 2.0.1 (2.03), Andyne Computing, 613/548-4355, $695.** This effective end-user data-reporting tool puts a considerable workload on the corporate information department, but it sidesteps the hassles of SQL data access and produces great reports with minimal effort. Jul 94

★★★ **Street Atlas USA 2.0, DeLorme Mapping, 207/865-1234, $169.** For the most part, this geographical information software delivers what it promises at a great price. Although inaccuracies in the data are troubling, DeLorme pledges to fix all reported errors in subsequent annual updates. Oct 94

★★★★ **TopDown 4.0 (4.1), Kaetron Software Corp., 713/298-1500, $345.** Flowcharting program's custom symbols, multiple palettes, and automatic drawing aids, and its ability to let you easily create and navigate lower-level charts, make it a productive tool. Jul 94

★★ **Useful Voice Processor for Macintosh 1.1v7 (1.1v9), Useful Software Corp., 508/774-8233, $179.95.** Dictation software lets you record and transcribe on a Mac. It has some useful features, but you must take uncommon care to avoid crashes. Dec 93

★★★★ **ZipZapp 1.0, True Basic, 603/298-8517, $39.95.** You can use this data-reference utility to find an area code, the correct spelling of a city's name, and more. The interface is intuitive, and the cost, low. Oct 94

★★★ **ZP4 12.1 (14), Semaphore Corp., 408/688-9200, $125.** Inexpensive bulk-mail software supports batch and individual processing, but the progress indicators are uninformative, and unattended operation requires extra work. Sep 94

COMMUNICATIONS/NETWORKS

★★ **AccessPC 3.0, Insignia Solutions, 415/694-7600, $129.95.** Utility translates most word-processor and some database formats, but it doesn't translate graphics and some of its translations result in data loss. Apr 94

★★★ **Crosstalk for Macintosh 2.0 (2.0.1), Digital Communications Associates, 404/442-4095, $195.** Commendable communications product has a feature set that well matches its competition. Still, the script editing is complex and you must manually enter phone numbers each time you use it. Apr 94

★★★ **Delrina FaxPro for Macintosh 1.0 (1.5.1), Delrina Corp., 408/363-2345, $129.** Fast, efficient fax software has an excellent address-book feature but also has some interface quirks. Feb 94

★★★★ **DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, $100.** File-transfer and translation utility works with floppies, removable drives, and

continues

Star Ratings

network volumes and supports wild cards in DOS extensions. Apr 94

★★★★ **EtherPeek 2.0.3 (2.0.4), LocalPeek 2.0.3 (2.0.4), TokenPeek 1.0 (2.0.3), AG Group, 510/937-7900, $495 to $995.** Priced at a fraction of the cost of dedicated hardware analyzers, these network analyzer tools give you better analysis with a friendlier interface. They're a worthwhile investment. Jan 94

★★★★ **MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, $149.** If your PC files are in archaic formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. Apr 94

★★★ **MicroPhone Pro 2.0, Software Ventures Corp., 510/644-3232, $295.** The new feature set of this communications package includes multiple sessions, faxing, TCP/IP networking, and more, but it's a mixed bag. Not all the features are well integrated, although some are innovations for which users will be grateful. Oct 94

★★★ **On The Road 1.1, Connectix, 415/571-5100, $99.** Helpful PowerBook utility looks at what's hooked up to your computer and adjusts accordingly—for example, printing when a printer is available and otherwise deferring printing. Dec 93

★ **PowerShare Collaboration Servers, Apple Computer, 408/996-1010, $999.** Before this collaboration software will be ready for prime time, Apple needs to overhaul the complex Admin application, add serious diagnostic aids, provide comprehensive documentation, and offer knowledgeable technical support at a price less than that of the program itself. Aug 94

★★★★ **Silver Cloud 1.2 (1.2.1), AG Group, 510/937-7900, $495 to $1595.** If you are administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. Feb 94

★★★ **SITcomm 1.0, Aladdin Systems, 408/761-6200, $120.** Inexpensive telecommunications software is fairly easy to set up and use, and will do well for people who use just one or two online services. Still, it lacks true scripting and has limited protocol options. Apr 94

★★★ **Snap Mail 1.01, Casady & Greene, 408/484-9228, $200 to $1440.** Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. Jun 94

★★ **SoftPC 3.1, Insignia Solutions, 415/694-7600, $499.** While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. Mar 94

★★ **SoftWindows 1.0, Insignia Solutions, 415/694-7600, $499.** You can run Windows software on a Power Mac with this emulation software, but although it's a viable solution, you pay the price in terms of performance, compatibility, and actual cost. Aug 94

★★★★ **Timbuktu Pro 1.0 (1.05), Farallon Computing, 510/814-5000, $199 to $1999.** Terminal emulation product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. May 94

★★ **TrafficWatch II 2.0 (2.1), Neon Software, 510/283-9771, $495.** The price of this AppleTalk traffic monitor is closer to that of full-blown network analyzers but without printing, alarms, or true multiprotocol support, this product misses the mark. Jun 94

★★★★ **VersaTerm 5.0 (5.04), Synergy Software, 215/779-0522, $195.** The price and feature set of this network terminal-emulation package make it a terrific value, in spite of its complex documentation and limitations. If you're looking for a fast path to Internet connectivity, this is it. Jan 94

DESKTOP PUBLISHING

★ **AboutFace 1.1.1 (1.1.2), Big Rock Software, 716/288-2860, $69.95.** Type-specimen generator has many serious deficiencies that need to be addressed. Jan 94

★★★★ **Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, $895.** Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. Nov 93

★★★★ **FontChameleon 1.0.1, Ares Software Corp., 415/578-9090, $295.** Font utility introduces a new font-creation technology; it builds serif and sans serif fonts from a master outline file. It offers high-quality renditions of popular fonts, plus customizes fonts. Sep 94

★★★ **FontMixer 1.0, Monotype Typography, 312/855-1440, $79.** Although a tad expensive for a one-trick pony, this font utility is a straightforward, relatively painless way to mix characters from different fonts to create composite fonts. Oct 94

★★★★ **Fontographer 4.0.4, Altsys Corp., 214/680-2060, $495.** No other font editor does more or works better than this one. For the price of a few font families, it can give you a universe of unique faces. Oct 94

★★ **FotoTune 1.1 (1.13), Agfa Division of Miles, 508/658-5600, $395.** Color-management software has a capable engine, but it's not the complete color-management system Agfa touts. Apr 94

★★★★ **FrameMaker 4.0 (4.04), Frame Technology Corp., 408/433-3311, $895.** For such projects as long, structured documents—books, instruction manuals, and textbooks—this desktop publishing program is one of the best tools available. It's fast, well mannered, and a real time-saver. Mar 94

★★★★ **Print Shop Deluxe 1.0 (1.1), Broderbund Software, 415/382-4400, $49.95.** Even the most ham-fingered can create professional-looking greeting cards, signs, banners, letterhead stationery, and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. Apr 94

★★★★ **QuarkXPress 3.2, Quark, 303/894-8888, $895.** This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. Nov 93

★★★ **ReadySetGo 6.0.2, Manhattan Graphics Corp., 914/725-2048, $395.** There's no strong reason not to use this desktop publishing software if its tools meet your needs, but there's no compelling reason to choose it over the competition, either. Its low price is nice, but not enough. Oct 94

★★★★ **Tableworks Plus 1.05, Npath, 206/392-7745, $299.** Publishing utility adds a full table-editor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. Jan 94

EDUCATION

★★★ **Creative Writer 1.0, Microsoft Corp., 206/882-8080, $64.95.** Graphics/page-layout/word-processor hybrid offers some terrific type effects, zany sounds, bright graphics, and wacky characters. While it doesn't teach kids to be better writers, it does encourage them to develop ideas. Sep 94

★★★ **The Cruncher, Davidson & Associates, 310/793-0600, $59.95.** If you want to teach a child spreadsheet basics, this combination educational spreadsheet and business application will do the job. It's creative and easy to use, but slow. Aug 94

★★★★ **Grolier Multimedia Encyclopedia, Grolier Electronic Publishing, 203/797-3530, $395.** CD-ROM encyclopedia has excellent search capabilities, weighs much less than a shelf of books, and is lots of fun. Its timeliness and some hierarchical snafus were slight problems. Jul 94

★★★★ **How Computers Work, Time Warner Interactive Group, 818/955-9999, $43.60.** Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. Jan 94

★★★ **HyperStudio, Roger Wagner Publishing, 619/442-0522, $179.95.** Hypermedia authoring tool supports color and many multimedia functions through easy-to-use dialog boxes, but the interface doesn't always follow Apple guidelines. Dec 93

★★★ **MacGrade 1.5.5 (2.2.7), CalEd Software, 800/795-0641, $85 to $245.** Grade-book program has a straightforward, simple interface and clear documentation. Although there's room for improvement, it's easy to use and flexible. Feb 94

★★★★ **The Rosetta Stone, Fairfield Language Technologies, 703/432-6166, $395.** Foreign-language instruction on CD-ROM is a valuable educational tool and fun to use. The lessons are well paced, and the content is generally excellent and diverse. Jan 94

★★★ **Small Blue Planet 1.2.1, Now What Software, 415/885-3432, $79.95.** Nicely integrated collection of beautiful Earth-from-space images on CD-ROM lacks many features of standard atlases and doesn't have a search function, but is endlessly fascinating. Jul 94

ENTERTAINMENT

★★★★ **Crystal Crazy, Casady & Greene, 408/484-9228, $49.95.** Ultraglossy, superpolished version of the classic Crystal Quest is challenging and fun. Each level retains some old elements, and adds some new ones to keep you on your toes. Jun 94

★★★★ **Falcon MC 1.0, Spectrum HoloByte, 510/522-1164, $69.95.** Whether you're an armchair jet jockey or an experienced fighter pilot, you're bound to be impressed by the 4-bit color, enhanced graphics, and sophistication of this flight simulator. Dec 93

★★★ **Firefall Arcade 1.0 (1.0.2), Inline Software, 617/935-1515, $49.95.** If you loved the classic video game Centipede, or are just looking for a fun shoot-'em-up, this arcade-style game will satisfy. Jun 94

★★★ **Hell Cab 1.0.1, Time Warner Interactive Group, 818/955-9999, $35.97.** Take a diabolical New York cabbie with a penchant for time travel, add a few brainteasers, and you've got this engaging game on CD-ROM. It's slow and the arcade sections are hard to control, but overall it succeeds. Jan 94

★★★★ **Myst 1.0 (1.01), Broderbund Software, 415/382-4400, $59.95.** The smooth pacing of actions and sounds in this beautiful CD-ROM game give it a dreamlike quality. This is a game that's been polished until it shines. Mar 94

★★★★ **SimCity 2000, Maxis Software, 510/254-9700, $54.95.** In essence, your goal with this marvelous city-simulation software is to build a city and run

it successfully. The game is fascinatingly complex, but it's simple to use, and the elaborate graphics are so lovely that it's even fun just to watch. Jun 94

★★★★ **Spectre Supreme, Velocity Development, 415/274-8840, $69.95 to $89.95.** The pleasure of this game comes not in high scores, but in the almost addictive sense of control you get from moving your tank around the screen. Dec 93

★★★★ **Spin Doctor (1.0), Callisto Corp., 508/655-0707, $59.95.** In the tradition of the best Macintosh games, this game tests your wits and reflexes alike. It's part strategy game, part kinetic sculpture. Jun 94

FINANCE/ACCOUNTING

★★★★ **Andrew Tobias' TaxCut 1993, MECA Software, 203/255-1441, $79.95.** The free-form approach and flexible Help menus of this tax-preparation software make filling out your tax return a smooth, almost relaxing process. The only state versions available are California and New York. Apr 94

★★★ **ExpensePlus 1.0.1 (1.0.2), State of the Art, 714/753-1222, $139.95.** Software uses a Newton MessagePad to record expenses, then sends the data to a Mac to create and print expense reports. While it's a real time-saver, you'll need AppleScript expertise to modify the expense reports. Apr 94

★★ **Financial Competence 1.5, Competence Software, 603/435-5098, $99.** This business economics tutorial explains how financial statements are compiled and how they relate to each other, but you could learn the same things from a book, faster and for less money. And that might just be the more financially competent thing to do. Jul 94

★★★★ **MacInTax 1993, Intuit, 602/295-3110, $69.95.** Tax-preparation software provides a reasonably detailed manual and a reliable, structured interface for building your tax return. Its inability to accept figures containing amounts in cents or round off to whole dollar amounts will frustrate some users. Apr 94

★★★ **MacInTax Tax Planner, Intuit, 602/295-3110, $29.95.** Software allows you to construct a five-year forecast of your tax liability, projecting tax figures through 1997 in a concise summary format. If you have a tax preparation program, you can do the same thing by creating alternative tax returns. Apr 94

★★★ **MacInTax Tax Savings Guide, Intuit, 602/295-3110, $19.95.** Simple, straightforward collection of well-written, fully indexed tax tips and suggestions is designed to help you better understand your tax return and reduce your tax liability. Although strong in content, it doesn't allow you to copy and paste, export as a text file, or even print. Apr 94

★★★ **MacMoney 4.01, Survivor Software, 310/410-9527, $89.95.** Personal-finance software has new and improved features that will please longtime users, but it hasn't kept up with the leaders in the field and won't win many new converts. Jul 94

★★★ **Managing Your Money 6.0, MECA Software, 203/255-1441, $79.95.** Personal-finance program does a good if somewhat roundabout job of keeping track of your total financial picture. Although it isn't as easy to use as the competition, it excels in tax, investment, and financial planning. Jun 94

★★★★ **Quicken 4, Intuit, 415/858-6095, $69.95.** Personal-finance software is powerful and easy to learn, even for a financial neophyte. Although slower than previous versions, 4.0 lives up to its promise of making financial chores easier and better organized. Nov 93

GRAPHICS

★★★★ **Adobe Illustrator 5.5, Adobe Systems, 415/961-4100, $595.** Despite slight speed disappointments, this draw program's upgrade is a bargain. It includes more than 200 tile patterns, 220 fonts, and the Acrobat Distiller and Exchange utilities. Sep 94

★★★★ **Aldus FreeHand 4.0 (4.0a), Aldus Corp., 206/622-5500, $595.** The new page-design and text-editing functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. Mar 94

★★★ **Canvas 3.5 (3.5.2), Deneba Software, 305/596-5644, $399.** Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. Jan 94

★★★ **Collage 1.0.1 (2.0), Specular International, 413/253-3100, $399.** Image-compositing software is a flawed but serviceable tool that allows you to combine and composite multiple RGB images stored in PICT, TIFF, and Photoshop 2.5 formats. Jul 94

★★ **ColorUp 1.0, Pantone, 201/935-5500, $99.95.** Professional graphic designers don't need the advice of this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. Nov 93

★★★★ **DeBabelizer 1.5 (1.5.5), Equilibrium Technologies, 415/332-4343, $299.** If you spend any significant time dealing with file conversion, you should have this bitmapped-graphics-conversion software. Nov 93

★★★★ **DeBabelizer Lite 1.0 (1.1), Equilibrium Technologies, 415/332-4343, $129.** Terrific graphics utility converts graphics files from one format to another. It offers a choice selection of capabilities at a nice, slim price. Aug 94

★★★ **DesignWorkshop 1.0 (1.1), Artifice, 503/345-7421, $895.** The accessible interface and versatile modeling environment of this 3-D modeling software may be worth the fairly high price, particularly for architectural-design conceptualization. May 94

★★★ **Infini-D 2.5.1 (2.6), Specular International, 413/253-3100, $695.** Serviceable 3-D graphics program has a wide range of modeling, rendering, and animation options, with a straightforward interface and quick operating speed. Feb 94

★★★★ **IntelliDraw 2.0, Aldus Consumer Division, 619/558-6000, $129.** Wonderful general-purpose graphics package works well, does a great job of automating drawing tasks, and is straightforward. Despite its breadth of features, it always feels approachable. Sep 94

★★★★★ **Kai's Power Tools 2.0a (2.1), HSC Software, 310/392-8441, $199.** Phenomenally powerful suite of Photoshop plug-ins have an addictive quality typically associated with arcade games. There's no end to the automated effects you can generate, the ways you can apply them, and the artwork you can create. May 94

★★★ **Koyn Fractal Studio 2.02, Koyn Software, 314/878-9125, $149.95.** Software lets you generate beautiful fractals of your own design. It's a reasonable choice if you are interested in Sierpinski triangles or naturalistic forms, but it's not an all-fractals-for-all-people program. Aug 94

★★★★ **MacroModel, Macromedia, 415/252-2000, $1495.** This 3-D modeling software is a solid resource to have along when you venture out into 3-D space. The interface is elegantly simple, making the Mac's inner space a more pleasant place to work. May 94

★★★★ **MetaFlo', The VALIS Group, 415/435-5404, $595.** Graphics utility yields interesting visual effects with a minimum of fuss. It imparts elasticity to 2-D images, letting you push and pull collections of pixels while retaining the visual integrity of the image. Aug 94

★★★★ **Paint Alchemy 1.0, Xaos Tools, 415/487-7000, $99.** For the price, these plug-in graphics effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 94

★★★ **Pointillist, Pictor GraFX, 310/865-0495, $39.95.** Stereogram software creates images that look like random dots, but as you focus beyond the page, a 3-D image emerges from the pattern and appears to hover inches in front of the background. It's gleefully wacky. Jul 94

★★ **Ray Dream Designer 3.0.3 (3.1), Ray Dream, 415/960-0768, $349.** Although this 3-D–illustration software remains a price leader, unstable operation, misbehaving features, and sluggish performance are problems that need to be rectified. Jul 94

★★★★ **Scenery Animator 1.0.4 (1.1), Natural Graphics, 916/624-1436, $149.** Landscape rendering and animation software uses U.S. Geological Survey data to create remarkably realistic 3-D representations of terrain. Its flaws are few, and our reviewer recommends it. Aug 94

★★★★ **Showplace 2.0 (2.1), Pixar, 510/236-4000, $495.** Entry-level, 3-D modeler is suitable for illustration and other graphic arts applications. This version offers improved access to MacRenderMan, one of the best renderers around, plus plug-in modeling tools. Apr 94

★★★ **StrataVision 3d 2.6.3 (3.1), Strata, 801/628-5218, $695.** 3-D program includes animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. Feb 94

★★★★ **StudioPro 1.0 (1.1), Strata, 801/628-5218, $1495.** If you need a well-balanced, all-in-one 3-D modeling, rendering, and animation solution, this application is an excellent choice. Mar 94

★★★ **Transverter Pro 1.0 (1.51), TechPool, 216/291-1922, $395.** Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program attempting to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93

★★★ **Typestry 2.0 (2.1), Pixar, 510/236-4000, $299.** An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D type-renderer a popular choice. This version still lacks canned positioning effects. Jun 94

★★★ **upFront 2.0, SketchTech, 612/379-9181, $299.** Capable modeler is something of an acquired taste. However, take the time to learn it and you'll find useful, if unconventional and demanding, tools that are well suited for architectural modeling. Jan 94

MATH/SCIENCE

★★★★ **Caduceus Science Review Macintosh Project 1.0 (1.1), Scientia, 617/776-3427, $250.** If you're taking the MCAT, you'd be nuts not to buy this interactive science review. With proper use, its 9MB of files are certain to improve your score. Apr 94

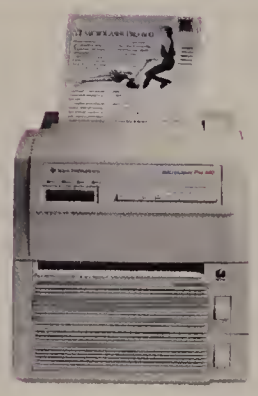
★★★★ **CSC ChemOffice 2.0, Cambridge Scientific Computing, 617/491-6862, $995.** Comprehensive chemistry software is the Mac equivalent of software that seven years ago would have cost $200,000.

continues

Not everything in Texas comes easy.

microWriter™ PS23 Printer
Under $700.

An ***entry-level, laser-quality printer*** for small businesses and home users. 300 dpi, 5 pages per minute, 23 scalable fonts, Mac™/Windows™/DOS compatible. Adobe® PostScript®/PCL 5 emulations.

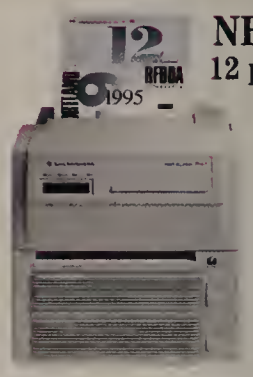


microLaser™ Pro 600 Printer
Under $1,300.

The easy solution for users looking for a ***feature packed, high performance 600 dpi printer.*** It comes standard with a printing speed of 8 pages per minute, 6 MB memory, two 250 sheet paper trays. Mac/Windows/DOS compatible. Adobe PostScript 2/PCL 5 emulations.

Now available on microLasers:

Optional multi-network interface with EtherTalk.



NEW 12 ppm

microLaser Pro E Printer
Under $1,450.

Ideal for volume intensive small work groups. 12 pages per minute, 600 dpi, Adobe Memory Booster.™ Mac/Windows/DOS compatible. Optional multi-network interface now available.

microLaser Pro 600 is winner of these fine awards.

microWriter is winner of these fine awards.

Adobe PostScript

Standard on microLasers and microWriter PS23.

All prices are estimated street prices. Dealer prices may vary. microMarc, microWriter, microLaser, Color Magic, and "Extending Your Reach" are trademarks of Texas Instruments Incorporated. OS/2 is a registered trademark of IBM, Corp. Mac is a registered trademark of Apple Computer, Inc. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems, Inc. Windows is a registered trademark of Microsoft Corporation. PCL is a trademark of Hewlett-Packard, Inc. © 1994 TI.

But our printers do.

You won't get thrown by a TI printer. You'll find 20 years of experience designed into a line of printers that redefines easy. A family of friendly printers that extend your reach – without extending your budget.

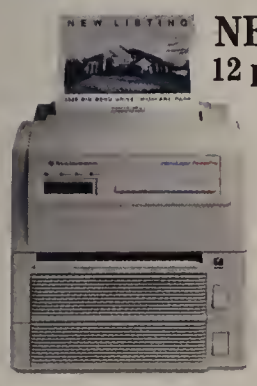
Easy to use. As you have come to expect with a Mac, our printers are designed to be *plug and run.* Just open the box†, load the software, pop in the consumables and you're ready.

Easy to maintain. You'll find our printers virtually trouble-free. From printheads to toner cartridges to imaging units, our long-life consumables can be dropped into place in seconds — and they're economical enough to give you a very low cost per page. We have even eliminated the need for special tools to upgrade your printer. To add more memory to our microWriter or microLaser printers, simply remove two thumbscrews, pop in the board and you're done.

Easy to service. We've built our printers to be trouble-free, complete with a one-year limited warranty and a toll-free technical support line. So if you do have a question, you get live, friendly assistance from professionally trained technicians.

Easy to own. Our printers have the friendliest prices around. And we're so sure you'll like them, we offer a 30-day risk-free trial†† to make sure you're perfectly satisfied.

Easy to buy. Just call **1-800-TI-TEXAS** (1-800-848-3927). Ask us anything you want. We'll send you literature and competitive comparisons within 24 hours with all the details you'll need to find the TI printer that's just right for you.



NEW
12 ppm

microLaser PowerPro Printer
Under $1,750.

Easily one of the fastest 600 dpi printers for the price, and ***ideal for heavy graphics printing.*** Start with the Pro 600 and add a blazing 12 pages per minute, a turbo charged processor, and more scalable fonts. Mac/Windows/DOS compatible.

Ready! for OS/2

Energy Star EPA POLLUTION PREVENTER

microWriter, microLaser Pro 600.

Dealer prices may vary. †Cable not included. ††Offer applies to all new microWriter and microLaser printers if returned in good condition.

EXTENDING YOUR REACH™

TEXAS INSTRUMENTS

Circle 266 on reader service card

Star Ratings

It's a winner. Feb 94

★★★ **In5tat 2.01, GraphPad 5oftware, 619/457-3909, $95.** For scientists with limited statistics backgrounds, the chatty clarity of this lab-oriented statistics software's help screens will be invaluable, while the limited variables and minimal graphics won't be a problem. Nov 93

★★★★ **JMP 3.0, 5A5 Institute, 919/677-8000, $695.** This statistics software can be used for a wide range of biological, chemical, and physical-science investigations. New features include floating tool palettes, an annotation tool for data tables, and an experimental-design module. Sep 94

★★★★ **LabView for Mac 3.0.1, National Instruments, 512/338-9119, $1995.** For large-scale, demanding projects in data acquisition and analysis, this scientific software is an unchallenged standard, in a class by itself. Jul 94

★★★ **Maple V 3.0, Waterloo Maple Software, 519/747-2373, $795.** If you prefer to do your own programming and function creation, you'll benefit from this symbolic mathematics software's efficient use of your Mac's resources. This version hits most of the points on your symbolic-math wish list. Oct 94

★★★ **QC Tools 1.0, Abacus Concepts, 510/540-1949, $245.** Quality-control tool kit for StatView appears to introduce a slight slowdown in program response, but is well designed, well documented, and suitable for quality-control neophytes as well as professionals. Jan 94

★★★★ **Resampling 5tats 1.0, Resampling 5tats, Inc., 703/522-2713, $225.** Innovative statistics software has proved itself to be a superior teaching tool in numerous classroom tests. If you have any interest in statistics, you should give this admirably straightforward approach careful consideration. Jun 94

★★★★ **SerePlot 2.12, 5cientfic Visions, 301/593-0317, $135.** If you have piles of data and don't need animated, exploding bar-charts in 24-bit color, this scriptable plotting software should be part of your analysis tool kit. Jun 94

★★★★ **5pyglass Plot 1.0, 5pyglass, 217/355-6000, $295.** This scientific-charting software is the first choice for serious large-set plot crunching. Oct 94

★★★★ **5uper5cope II 1.25, GW Instruments, 617/625-4096, $1490.** Despite a relatively small instrument library, this laboratory data-acquisition software effectively covers a wide range of needs, and learning to use it won't become your life's work. Oct 94

★★★★ **Turing's World 3.0, C5LI Publications, 312/568-1550, $19.95.** Computer-science educational software lets you investigate some fundamentals in computing at an almost unbelievable bargain price. Feb 94

★★★★ **Visualization of Natural Phenomena, Telos/5pringer Verlag, 408/249-9314, $59.95.** CD-ROM introduction to applying all aspects of computer graphics to scientific imaging covers all disciplines and offers definitive analysis of methods. No other source covers this much material, at this level of clarity. Jan 94

ORGANIZATION/PRODUCTIVITY

★★★★ **Arrange 1.1 (2.0), Common Knowledge, 415/325-9900, $349.** This personal information database's flexible, intuitive approach to data-handling makes it an excellent tool for storing all kinds of day-to-day information. May 94

★★★★ **DateBook & TouchBase Pro Bundle 4.0, Aldus Consumer Division, 619/558-6000, $89.99.** Personal information manager package is now easier to use and offers many new features. The excellent linking between contacts and calendar is the most significant feature. Sep 94

★★★ **DateView 1.0.1 (1.0.2), Advanced 5oftware, 515/225-4163, $99.95.** If you're willing to sacrifice some features to get simplicity and speed, this calendar/to-do manager makes sense. It integrates with the contact manager, InTouch. Aug 94

★★★ **Dynodex for Macintosh 3.5, Portfolio 5oftware, 802/434-6400, $69.95.** Although this program doesn't currently link to a calendar, it's an excellent contact manager. This upgrade has a few new features, improved performance, and an easier interface. Sep 94

★★★ **Full Contact 2.01 (2.02), FIT Software, 408/562-5990, $169.** Personal information manager can handle with speed and style tasks that would choke other products, but frequently, using it feels like a full-time job. Aug 94

★★★★ **In Control 3.0.4, Attain Corp., 617/776-1110, $85.** Excellent to-do–list manager and outliner, coupled with a good calendar; a strong choice if you live and die by to-do lists. It does have some oddities, though, such as not allowing you to copy across views. Oct 94

★★★ **Now Contact 1.0 (1.1), Now 5oftware, 503/274-2899, $69.** This contact manager has some innovative features and could easily become the top address-book program for the Mac by adding some features, such as file reconciliation. Mar 94

★★ **Rae Assist 1.0.2 (1.5), Rae Technology, 408/725-2850, $99.** Although this personal information manager offers some fresh ideas, including automatic linking of company and contact information, it's too big and too slow. Jan 94

★★★ **TimeSquare 1.0, Team Building Technologies, 514/278-3010, $149.** Fast, flexible, network calendar program has lots of handy features, but it's missing a few as well, such as multiday events and label grouping. Aug 94

PRESENTATION TOOLS

★★★★ **Adobe Premiere 3.0 (4.0), Adobe Systems, 415/961-4400, $695.** Solid and dependable QuickTime video-editing software offers a structured, responsive, and flexible interface with enhancements that range from the mundane to the dramatic. It can now mix 99 tracks. Jan 94

★★ **Animation Master 2.0.5, Hash Enterprises, 206/750-0042, $699.** Although this animation software packs extraordinary power at a reasonable price, it's needlessly difficult to learn and prone to instability. Oct 94

★★★★ **Astound 1.0, Gold Disk, 408/982-0200, $399.** Presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's a good value. Nov 93

★★★★ **Authorware Professional 2.0.1, Macromedia, 415/252-2000, $4995.** Multimedia-scripting and -presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. Feb 94

★★★ **Avid Video5hop 2.0, Avid Technology, 508/640-6789, $499.** QuickTime video-editing program shines in its intuitive, easy-to-use interface, although it may fall short on features for hard-core video professionals. Feb 94

★★★ **Deck II 2.1, O5C, 415/252-0460, $399.** AV Macs turn into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization. Jun 94

★★ **Elastic Reality 1.0 (1.2), Elastic Reality, 608/273-6585, $349.95.** Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface, poor documentation, and inadequate tech support make that a difficult task. Feb 94

★★★★ **FlipBook 1.0, 5. H. Pierce, 617/338-2222, $89.** Animation printing utility lets users make flip-books (consisting of a series of printed images that, through application of an extremely technical thumb-and-forefinger method, appear to move) out of QuickTime movies, PICS animations, and Scrapbook files. Jun 94

★★★ **HyperCard 2.2, Apple Computer, 408/996-1010, $249.** Authoring tool strikes a good balance between power and ease of use, and its price is reasonable. It may not satisfy all your wishes, but it should keep you happily building stacks until the next version comes along. Sep 94

★★★★ **Macromedia Director 4.0, Macromedia, 415/252-2000, $1195.** Although this multimedia program remains far from easy to use, this admirable upgrade increases the program's power and improves its interface. Multimedia professionals will continue to find it the best package available. Sep 94

★★★★ **Morph 2.0 (2.5), Gryphon Software, 619/454-6836, $239.** Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. Apr 94

★★ **MovieWorks 2.0.2, Interactive Solutions, 415/377-0136, $295.** With diligence you can get decent results with this all-in-one QuickTime-based multimedia package. But other entry-level programs make leaping into multimedia easier and more rewarding. Sep 94

★★★ **Passport Producer Pro 1.0 (1.1.2), Passport Designs, 415/726-0280, $995.** Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Path animation is limited to entrances and exits. Apr 94

★★★★ **Persuasion 3.0, Aldus Corp., 206/622-5500, $339.** Users have plenty of new features to cheer about, including improved tool palettes, extensive charting options, and hypertext functions with this presentation graphics program's upgrade. High memory and disk-space requirements are drawbacks, however. Sep 94

★★★ **QuickFlix 1.0 (1.1.1), VideoFusion, 419/891-1090, $149.** Approachable QuickTime movie-making software lacks the high-end features of other programs but costs a whole lot less. Feb 94

PROGRAMMING

★★★★ **IDL 3.5, Research 5ystems, 303/786-9900, $1500.** In this shockingly powerful, compact, graphics-oriented, interpreted language, a single command is worth a page of C-language code. Oct 94

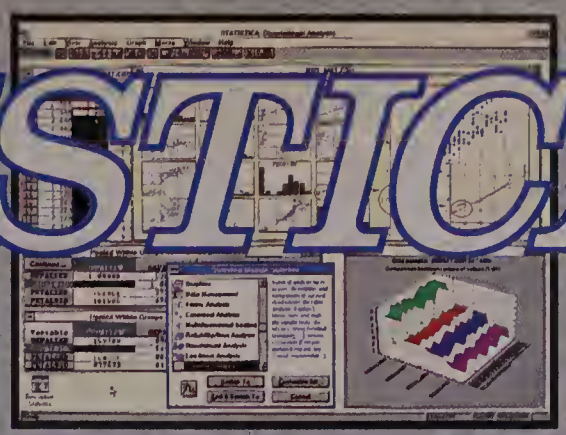
★★★★ **Object Master for Think C and C++, ACI U5, 408/252-4444, $255.** Object-oriented development environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. Apr 94

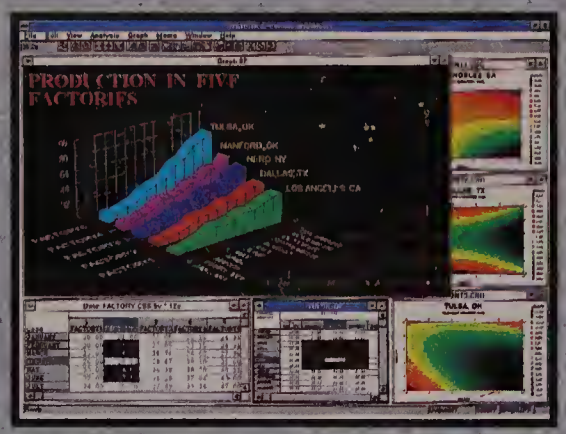
★★★★ **5malltalk/V for Macintosh 2.0 (2.02), Digitalk, 714/513-3000, $495.** Object-oriented development system is now even more viable for commercial projects, while Digitalk's customer support and documentation set a standard other vendors should emulate. Feb 94

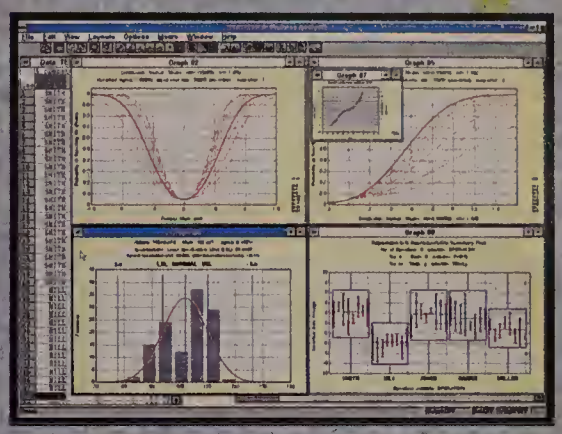
continues

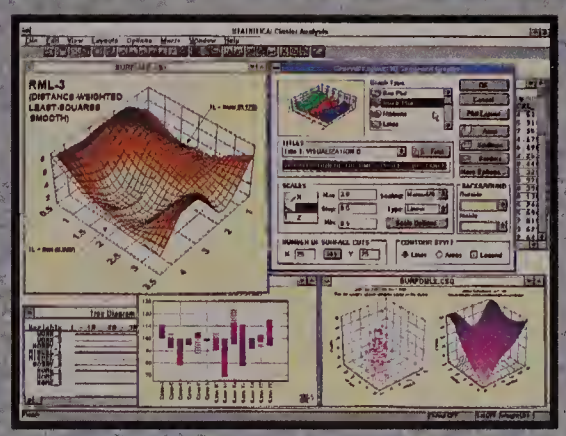
STATISTICA/w

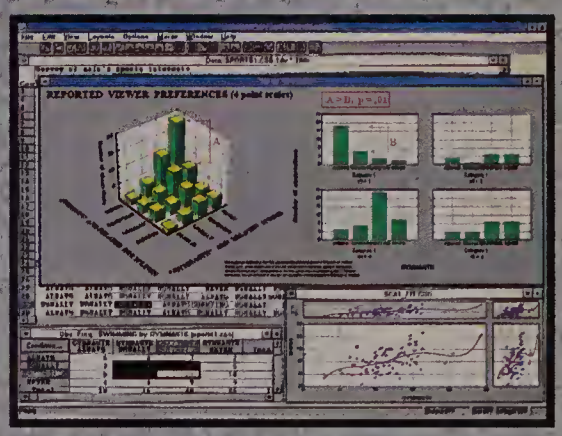
Windows, DOS, Macintosh

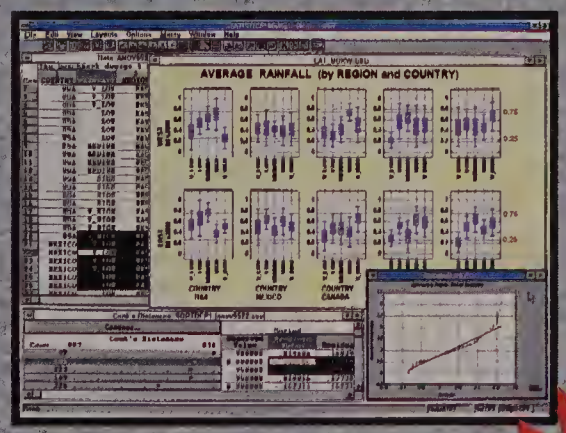


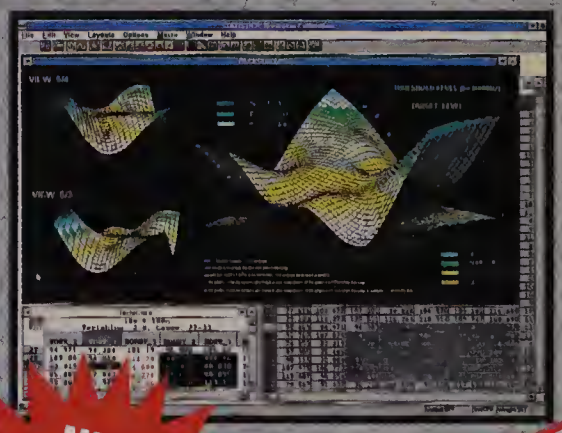


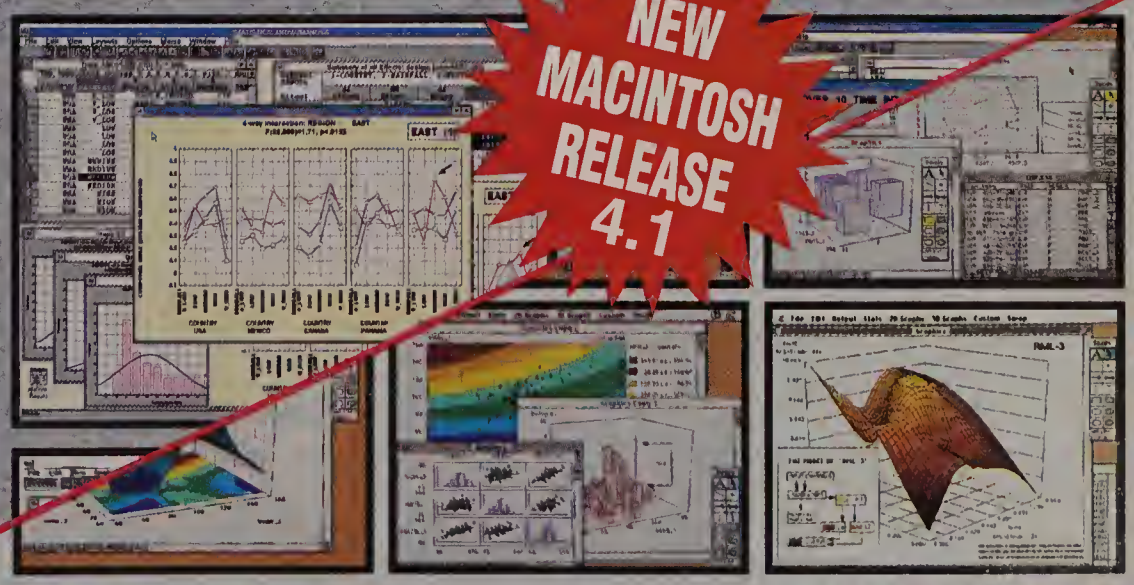












STATISTICA/w™ (for Windows) Complete Statistical System with thousands of on-screen customizable, presentation-quality graphs fully integrated with all procedures ■ Complete Windows 3.1 support, DDE, OLE, TT-fonts, multiple toolbars, right mouse button support ■ Unlimited numbers of data-, results-, and graph-windows ■ Inter-window integration: data, results, and graphs can be treated as objects and converted into one another in a number of ways ■ The largest selection of statistics and graphs in a single system; comprehensive implementations of: Exploratory techniques; multivay tables with banners (presentation-quality reports); nonparametrics; distribution fitting; multiple regression; general nonlinear estimation; stepwise logit/probit; general ANCOVA/MANCOVA; stepwise discriminant analysis; log-linear analysis; factor analysis; cluster analysis; multidimensional scaling; canonical correlation; item analysis/reliability; survival analysis; time series modeling; forecasting; lags analysis; quality control; process analysis; experimental design (with Taguchi); and much more ■ Manuals with comprehensive introductions to each procedure and examples ■ Hypertext-based Stats Advisor expert system ■ Extensive data management facilities (spreadsheet with long formulas, block operations, advanced Clipboard support, DDE hot links, relational merge, data verification, powerful programming language) ■ Batch command language and macros also supported, "turn-key system" options ■ All output displayed in Scrollsheets™ (dynamic, customizable, presentation-quality tables with toolbars, pop-up windows, and instant 2D, 3D and multiple graphs) ■ Extremely large analysis designs (e.g., correlation matrices up to 32,000x32,000, unlimited ANOVA designs) ■ Megafile Manager with up to 32,000 variables (8 Mb) per record ■ Unlimited size of files; extended ("quadruple") precision; unmatched speed ■ Exchanges data and graphs with other applications via DDE or an extensive selection of file import/export facilities ■ Hundreds of types of graphs, including categorized multiple 2D and 3D graphs, matrix plots, icons, and unique multivariate (e.g., 4D) graphs ■ Facilities to custom design new graphs and add them permanently to menu ■ On-screen graph customization with advanced drawing tools, interactive stretching and resizing of complex objects, interactive embedding of graphs and artwork, special effects, icons, maps, multi-graphics management, page layout control for slides and printouts; unmatched speed of graph redraw ■ Interactive rotation, perspective and cross-sections of all 3D and 4D graphs ■ Extensive selection of tools for graphical exploration of data: fitting, smoothing, overlaying, spectral planes, projections, layered compressions, marked subsets ■ Price **$995**.

Quick STATISTICA/w™ (for Windows) A comprehensive selection of basic statistics and the full graphics capabilities of STATISTICA/w ■ Price **$495**.

STATISTICA/DOS™ (for DOS) A STATISTICA/w-compatible data analysis system ■ Price **$795**.

Quick STATISTICA/DOS™ (for DOS) A subset of STATISTICA/DOS statistics and graphics ■ Price **$295**.

Domestic sh/h $10 per product; 14-day money back guarantee.

STATISTICA/Mac™ (for Macintosh) A STATISTICA/w-compatible, comprehensive data analysis and graphics system designed for the Macintosh ■ Large selection of statistical methods fully integrated with presentation-quality graphics (incl. EDA, multiplots, a wide selection of interactively rotatable 3D graphs; MacDraw-style tools) ■ Unlimited size of files ■ Full support for System 7, incl. "Publish and Subscribe" ■ Price **$695**.

Quick STATISTICA/Mac™ (for Macintosh) A subset of STATISTICA/Mac: a comprehensive selection of basic statistics and the full graphics capabilities of STATISTICA/Mac ■ Price **$395**.

Circle 99 on reader service card

StatSoft™

2325 E. 13th St. • Tulsa, OK 74104 • (918) 583-4149
Fax: (918) 583-4376

Overseas Offices: StatSoft of Europe (Hamburg, FRG), ph: 040/200347, fax: 040/4911310; **StatSoft UK** (London, UK), ph: 0462/482822, fax: 0462/482855; **StatSoft Pacific** (Australia), ph: (03) 663 6580, fax: (03) 663 6117; **StatSoft France**: ph: (1) 45 66 97 00, fax: (1) 45 66 06 51; Available from other Authorized Representatives worldwide: Sweden: AkademiData Scientific ph: 018-240035, fax: 018-210039; Finland: Statcon Oy ph: 24-334678, fax: 24-333867; Belgium: Texma NewTech ph: 10 61 16 28, fax 10 61 69 57; South Africa: Osiris ph: 12-663-4500, fax 12-663-6114; Japan (Macintosh): Three's Company, Inc., ph: 03-3770-7600, fax 03-3770-7784; Japan (Windows): Design Technologies, Inc., ph: 03-3667-1110, fax: 03-3668-3110.

StatSoft, STATISTICA/w, Quick STATISTICA/w, STATISTICA/Mac, Quick STATISTICA/Mac, STATISTICA/DOS, Quick STATISTICA/DOS and Scrollsheet are trademarks of StatSoft, Inc.

Star Ratings

★★★★ **Symantec C++ for Macintosh 6.0 (7.0), Symantec Corp., 503/334-6054, $499.** If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. Nov 93

★★★ **VIP BASIC 1.0.1 (1.0.3), Mainstay, 805/484-9400, $295.** Popular programming language lets programmers who know only BASIC get started producing real, if interpreted, Mac programs. It's a serious developer's tool, though it's not on the same footing as VIP-C. Jun 94

★★★★ **VIP-C 1.0.1 (1.5.1), Mainstay, 805/484-9400, $495.** If you've mastered the rudiments of C, this programming-code generator will let you code about ten times faster than you could using only an editor. Its real strength is in rapidly assembling smaller projects. May 94

UTILITIES

★★★ **AppleSearch 1.0, Apple Computer, 408/996-1010, $1799.** Although it has some rough edges, this product for archiving and retrieving text is highly useful. It presents retrieved information clearly and extracts text from documents in many formats. May 94

★★★ **Atticus Vista 1.0 (1.0.2), Atticus Software Corp., 203/348-6100, $69.95.** Control panel and application automatically catalog the disks you mount on the desktop. It has a few problems, including limited search options, but it can help bring order to disorganized disk collections. May 94

★★★★ **Automap Road Atlas for Macintosh 2.01 (2.04), Automap, 206/455-3552, $99.95.** Mapping software tells you how to get where you're going better than any other map or software our reviewer has seen. Although screen redraw is slow, it's worth it for the written directions and maps. Jul 94

★★★ **CD AllCache 2.0, CharisMac Engineering, 916/885-4420, $79.95.** CD-ROM accelerator improves access time by caching a CD's directory and putting its most frequently used data into RAM. Despite this software's limitations, most CD addicts will find the speed improvement worth the trouble. Sep 94

★★★★ **CD-ROM ToolKit 1.0.5 (1.1), FWB, 415/474-8055, $79.** Software accelerator can halve the time it takes to open files and search on a CD-ROM. Playback of QuickTime movies is often uneven. May 94

★★★★★ **Conflict Catcher II 2.1.1, Casady & Greene, 408/484-9228, $79.95.** Customizable, fast, and safe extension-management utility goes well beyond the basics. For Power Macintosh users, it even tells which extensions aren't written in native code and are likely to slow down Power Macs. Oct 94

★★★ **Connectix Desktop Utilities 1.0 (1.0.4), Connectix Corp., 415/571-5100, $99.** Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. Nov 93

★★★ **Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, $79.** Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. Nov 93

★★★ **CryptoMactic 1.01, Kent Marsh, 713/522-5625, $99.** Security software offers fast Finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn't quite hacker-proof, it's worth considering. Feb 94

★★★ **DiskDoubler 4.0, Symantec Corp., 503/334-6054, $79.95.** In pure efficiency terms, this file-compression software is a winner, but it lacks many features of previous versions, including passwords on self-extracting files and automatic recompression. Aug 94

★★★★ **DiskLock PB 1.0 (3.0), Symantec/Fifth Generation Systems, 503/334-6054, $99.** PowerBook security software balances robust security with simplicity and ease of use. It's much harder to crack than most PowerBook utility collections' security features, and will keep out all but the most determined. Jan 94

★★★★ **DiskTop 4.5 (4.5.1), PrairieSoft, 515/225-3720, $99.95.** Organizing a crammed hard drive is a more manageable task with this simple but powerful file-management utility that lets you copy, move, rename, delete, and find files—without using the Finder. Jul 94

★★★ **The Disney Collection Screen Saver, Berkeley Systems, 510/540-5535, $49.99.** Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that includes 16 different modules. Mar 94

★★★ **DriveShare 1.03, Casa Blanca Works, 415/461-2227, $129.95.** This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users, as its advantages over System 7 file sharing are slight. Nov 93

★ **DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, $59.95.** Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a $60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for $10, that makes it a bad deal. Jan 94

★★★ **DupLocator 1.03, Midnight Software, 303/933-1013, $99.** For new Macintosh users who don't have a general file utility, this software that locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. Jan 94

★★★ **Icon-It Pro 3.0.6, Olduvai Corp., 305/670-1112, $129.** Utility allows you to attach custom tool bars to almost any application, including the Finder. The interface is quirky, but you get used to it. Dec 93

★★★★ **Icon Mania 1.0 (1.01), Dubl-Click Software, 503/317-0355, $69.95.** Delightful icon-editing utility comes with terrific tools for building new icons, including an outstanding thumbnail feature that builds custom icons from graphics files. Aug 94

★★★★ **MacTools 3.0, Central Point Software, 503/690-8090, $149.** Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. Mar 94

★★★★ **Mr. File 2.0, Softways, 408/978-9167, $99.** The well-designed background capabilities of this Finder utility make it a handy tool for copying, finding, moving, launching, and renaming files, although it has a few interface quirks. Dec 93

★★★ **Now Compress 1.0 (1.0.1), Now Software, 503/274-2899, $69.** Compression utility holds its own in a crowded market; it's easy to use, it's complete, and it compresses as well as other options. Dec 93

★★★ **Now Fun, Now Software, 503/274-2899, $45.** Five control panels let you liven up your Mac by customizing everything from menu colors to system sounds. The included screen-saver modules and desktop patterns and pictures are fairly limited, though. Dec 93

★★★ **Open Sesame 1.02 (1.1), Charles River Analytics, 617/491-3474, $99.** Utility automates Finder operations, such as opening files, without resorting to macros. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than are those who don't follow a routine. May 94

★★★ **OptiMem 1.4.1 (1.5.6f), Jump Development Group, 412/681-2692, $129.** Systemwide memory manager monitors RAM use and allocates RAM where it's needed. Works best with software that handles minimum-memory situations effectively. Mar 94

★★★ **PopupFolder 1.0 (1.5), Inline Software, 617/935-1515, $59.95.** Finder utility is so handy and easy to use, you wonder why it isn't built into the Mac's system software. On the other hand, it's sluggish when readying pop-up menus for every folder. Aug 94

★★★★ **PowerMerge 2.0, Leader Technologies, 714/757-1787, $129.** Powerful file-management tool helps you keep individual files, folders, or entire volumes organized and up-to-date. This version lets you compare and launch documents, rename files, trash superfluous files, and lots more. Aug 94

★★★ **Power To Go 2.0, Claris Corp., 408/727-8227, $39.** PowerBook utility collection has a few unique slants—including a floating palette that can display battery-life estimates—that keep it above the also-rans. It does lack features of similar products. Dec 93

★★★ **ProFiles 1.0, Dayna Communications, 801/269-7200, $129.** Unusual new utility lets you group related files and folders for quick access and actions such as making aliases, copying, turning sharing on and off, and more. The recommended RAM allocation of 1MB may be a problem for computers with limited memory. Aug 94

★★★★ **QuicKeys 3.0, CE Software, 515/221-1801, $139.** The simple, unintimidating interface of this macro-building utility allows you to build a set of useful shortcuts quickly. Mar 94

★★★★ **RAM Doubler 1.0.1 (1.5), Connectix Corp., 415/571-5100, $99.** Inexpensive system extension doubles available RAM for many Mac users. There are a number of requirements, however, including System 7, 4MB of physical RAM, and a 68030 board. May 94

★★★ **Redux Deluxe 2.0.2 (2.5.1), Inline Software, 617/935-1515, $79.95.** Easy to learn and relatively simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. Jan 94

★★★★ **SAM 3.5.8 (4.0), Symantec Corp., 503/334-6054, $99.** Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. Mar 94

★★★★ **Screenscapes 1.0.1, Kiwi Software, 805/685-4031, $44.95.** With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility lifts desktop-pattern design to new heights of elegance. Nov 93

★★ **SCSI Director Pro 3.0.6, Transoft Corp., 805/565-5200, $99.** Utility provides simple, one-button hard disk formatting, but when it comes to doing some of the fancy tricks described on the box, the going gets rough and technical support costs $1.90 per minute. Sep 94

★★★ **Stop & Go 4.0, Engram International, 415/455-1100, $69.99.** File-protection/relaunch utility uses a portion of your hard disk to save a snapshot of the data in your Mac's RAM. It's fast, and it relaunches files, applications, and extensions in a single, unified process, but it's unduly complicated. Oct 94

★★★ **Tempo II Plus 3.0.9 (3.0.9a), Affinity Microsystems, 303/442-4840, $179.95.** Very capable macro-creating utility may be daunting for novices but offers plenty of power for advanced users. Mar 94

★★★★ **TimesTwo 2.0, Golden Triangle Computers, 619/587-0110, $149.** This driver-level compression utility is transparent and robust. It caused no problems through a two-month course of testing, on a sys-

continues

Should the New MiniCad 5 be your CAD Program?

Take the Quiz.

- I want a full-featured, proven market leader which can handle any job: 2D, 3D, cost estimation and client presentations.
- I want a program that runs on both the 68K-based Macintosh and the Power Macintosh. At no extra charge!
- I want a CAD program that is tailored to my needs, with specialized tools for architecture, mechanical engineering and design.
- I want an expandable CAD program which can be customized for specific solutions easily and inexpensively.
- I don't want to spend a lot for training or experience an enormous learning curve.
- I want an established company with constant R&D funding, so that my investment stays safe.

Accelerated for Power Macintosh

3 Free Application Specific Modules

Mechanical, Architectural, & Advanced Design

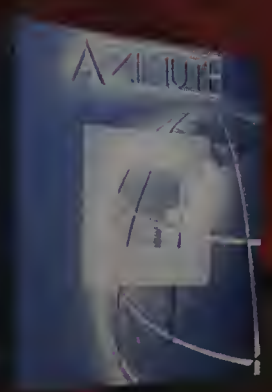
MiniCad 5 offers all of the above and more. The award-winning software has been hailed as the "features champion" by Macworld Magazine (March, 1993). Further, Graphsoft is dedicated to aggressive investment in CAD R&D. Graphsoft customers stay more productive than their competitors because Graphsoft supports both the latest technology and evolving user needs. MiniCad has long been the price/performance leader in Macintosh CAD. Don't be steered away from MiniCad by VARS who want you to buy high-priced CAD products that are hard to learn and only do a few things well. The VARS won't tell you that MiniCad 5 ships with a multi-media training CD, or that you receive 18 months of free technical support with Graphsoft products or upgrades. In short, MiniCad keeps more of your money in your pocket. Buy MiniCad 5 and save!

MiniCad 5 also includes: speed increases up to 100% even on 68K-based Macintoshes, a Claris CAD conversion program including a $495 upgrade price, a Claris CAD translator, and a helpful conversion guide, translators for importing and exporting to the other major CAD products, an upcoming Windows version, multi-media training CD 18 months of free technical support and a no-hassles 30-day money-back guarantee through authorized dealers. Contact Graphsoft today for detailed literature. To order immediately, call MacWarehouse, MacConnection, or your local dealer. Demo: $19.00

Late Breaking News

MiniCad Wins 1994 Macworld World Class Award for CAD

BLUEPRINT 5 Joins the Power Macintosh Family



Graphsoft

Azimuth

The ultimate map creation tool, including nine cartographic projections and more! Used by US News & World Report. 4 mice

Blueprint

Full-featured 2D drafting. Experience ease of use, high precision and an affordable price. 4 mice. MacWorld Editor's Choice!

10270 Old Columbia Road, Columbia Maryland 21046 Ph:410-290-5114 Fax: 410-290-8050

Power Macintosh is a trademark of Apple Computer Inc. MiniCad, Blueprint, and Azimuth are trademarks of Graphsoft, Inc.
Claris CAD is a trademark of Claris Corp.

Circle 46 on reader service card

Star Ratings

tem with myriad utilities and system software tools. Mar 94

★★★★ **Toner Tuner 1.0.3 (1.06), Working Software, 408/423-5696, $24.95.** Inexpensive, incredibly useful extension adds a sliding bar to print dialog boxes allowing you to adjust the amount of toner applied to each print job. If you can't save trees, you can at least save toner. Dec 93

★★★★ **ultraShield 1.252 (2.0), usrEZ Software, 714/756-5140, $149.** Sophisticated security product combines practically every feature you might need into an integrated package. Dec 93

★★★ **UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95.** Inspired, silly fun for your Mac's desktop comes from a control panel that adds three features: a screen saver, desktop patterns, and animations that run on your desktop while you work. The price for this whimsy is mostly in disk space. Jun 94

★★★★ **Virex 5.0 (5.03), Datawatch Corp., 919/549-0711, $99.95.** The extremely fast, trouble-free performance of this software makes the task of guarding against computer viruses almost painless. Its speed puts it ahead of the pack. May 94

★★★★ **VirtualDisk 1.1a (2.0), Continuum Software, 206/695-8136, $79.** Rapid disk cataloging; fast, efficient label-printing; and an excellent disk-copy utility make this software package a wonderful value. Jul 94

★★★ **Working Watermarker 1.02 (1.06), Working Software, 408/423-5696, $49.95.** Simple, useful system extension allows you to print or fax text and/or graphics "watermarks" in the background of virtually any document. Although it has imperfections, it's earned a permanent spot in our reviewer's System Folder. Jan 94

VERTICAL MARKETS

★★★★ **Claire, The Personal Music Coach 1.0.1, Opcode Systems, 415/856-3333, $129.95.** Musicianship program teaches pitch and interval recognition, sight singing, and intonation. Although the interface is nonstandard, it's logical and easy to learn. May 94

★★★★ **Finale 3.0.1, Coda Music Technology, 800/843-2066, $749.** Upgraded music-notation software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all other music-notation products must be judged. Dec 93

★★ **MacInteriors 1.0 (1.2), Microspot, 408/253-2000, $129.** Correctly placing objects is unduly cumbersome in this interior-design software, but once you catch on to the program's quirks, it's useful. Feb 94

★★★★ **Mayo Clinic Family Health Book 1.2, IVI Publishing, 612/686-0779, $69.95.** Medical CD-ROM for home use deals with the full gamut of health-care topics, from AIDS to zygotes, although it doesn't include any reference to alternative therapies. Sep 94

★★★ **Mayo Clinic: The Total Heart 1.0, IVI Publishing, 612/686-0779, $59.95.** Cardiovascular health and related subjects are the topics of this medical CD-ROM for home use. Although it makes liberal use of drawings, photographs, and animations, video sequences would have been more effective. Sep 94

★★★ **MusicTime 2.0, Passport Designs, 415/726-0280, $149 to $249.** Music-notation program is geared for hobbyists and students. If your needs aren't complex, it may fit the bill, at a great price. Oct 94

★★★ **Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99.** Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93

★★★ **SAM-CD, Scientific American Medicine, 212/754-0550, $395.** Despite a few shortcomings, such as the poor interface for case simulations, this medical reference work—a popular series of publications covering topics in clinical medicine—should prove a worthwhile addition to any medical library. Sep 94

★★★★ **WillMaker 5.0, Nolo Press, 510/549-1976, $69.95.** Legal software quickly and easily automates the creation of wills, health-care directives and proxies, and final-arrangements documents. It offers excellent supporting explanations and background. Jun 94

WRITING TOOLS

★★★★ **MacWrite Pro 1.5 (1.5 v2), Claris Corp., 408/727-8227, $249.** The clean, uncluttered interface of this low- to middle-level word processor is still one of its major assets. This upgrade adds support for QuickTime, PowerTalk, AppleScript, and more. May 94

★ **The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300 ext. 7370, $895.** CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, unreliability, and unforgivably poor design are unbearable. Apr 94

★★★ **Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179.** The most comprehensive American-made dictionary on CD-ROM works within any program and is good at guessing misspelled words. Although some functions don't work reliably, the quality and design of the software are better than those of other dictionaries on CD-ROM. May 94

★★★ **TextBridge 2.0, Xerox Imaging Systems, 508/977-2000, $99.** Optical character recognition software is impressive on good documents and can be trained and automated. You won't find that anywhere else at this price. Sep 94

★★★★ **Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95.** Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. It quickly and transparently prevents you from making embarrassing typos. Nov 93

★★★★ **WordPerfect for Macintosh 3.0 (3.0a), WordPerfect Corp., 801/225-5000, $495.** The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse. It's an accomplishment in ease of use. Mar 94

★★★★ **WriteNow 4.0.1, WordStar International, 617/494-1200, $119.95.** Tidy word processor's conservative use of memory (the application fits into a dainty 600K partition) and graceful interface will continue to win it enthusiastic fans. This version adds elegant table capabilities and PowerBook-friendly features. Jun 94

★★★ **A Zillion Kajillion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95.** Rhyming dictionary is quick, small, simple, and self-contained; but it only rhymes with the roots of search words (and ignores *-ed*, *-s*, and *-ing* endings). Nov 93

Hardware

INPUT DEVICES

★★★ **DrawingSlate, CalComp Digitizer Division, 714/821-2000, $395.** Digitizing tablet is a good, compact, low-cost implementation of pressure sensitivity, although the battery-operated stylus is a bit heavy. Jun 94

★★★ **Ear Phone Streamline AV, Jabra Corp., 619/622-0764, $169.** As a hands-free telephony tool—and as a replacement for the Apple PlainTalk microphone—this telephone/speech-recognition earpiece is a winner. Its biggest drawback is that you can't hear other Mac sounds, such as modem tones, when it's plugged in. Jul 94

★★★ **PenDirect ADB, FTG Data Systems, 714/995-3900, $398.** Input device lets you manipulate items on the Macintosh screen using a special stylus called a light pen. It works well, although it seems ergonomically inferior to a mouse for routine tasks. Mar 94

★★★ **TrakMate, Key Tronic Corp., 509/928-8000, $149.** Input device integrates a trackball into a wrist pad. While the design is interesting, it's not for everyone. Feb 94

★★★ **Wacom UD-1212R, Wacom Technology Corp., 206/750-8882, $749.** Graphics tablet with pressure-sensitive stylus is easy to use and highly customizable, though it's incompatible with AppleTalk and AppleTalk Remote. May 94

MISCELLANEOUS HARDWARE

★★ **AC5100, Altec Lansing Consumer Products, 717/296-2818, $180.** Lightweight powered speakers don't sound as good as they should. There's too much emphasis on the high end at the expense of the midrange, and they hiss noticeably. Dec 93

★★ **ACS150, Altec Lansing Consumer Products, 717/296-2818, $150.** Subwoofer rounds out the sharp tones of the ACS100, but the bass response is neither punchy enough nor loud enough, and the unit is about the size and weight of a concrete block. Dec 93

★★★ **AppleDesign Powered Speakers, Apple Computer, 408/996-1010, $179.** Tall and curvy powered speaker set looks and sounds good and can produce uncomfortably high volumes without noticeable distortion, but the bare-wire-and-terminal connections aren't user-friendly. Dec 93

★★★ **Apple Newton MessagePad, Apple Computer, 408/996-1010, $699.** Although Apple released this personal digital assistant too early and marketing hype led to mistaken expectations, this is a very intelligent piece of work with an impressive variety of serious business uses. Dec 93

★★★ **Apple PowerCD, Apple Computer, 408/996-1010, $400.** This extremely versatile and beautifully designed portable CD-ROM drive offers impressive audio and Photo CD features, but if you're a serious CD-ROM user, it's too slow to satisfy. Jan 94

★★ **G-Vox, Lyrrus, 215/922-0880, $399.** Hardware-software guitar-instruction package lets your Mac "hear" the notes you play on your guitar. Although the hardware works well, the software has some basic problems and doesn't live up to the hardware. Apr 94

★★★ **Hello Music, Yamaha Corp. of America, 714/522-9240, $449.** MIDI starter kit includes an impressive tone generator that's compatible with General MIDI Level 1 and Roland MT-32, but the included software is functional at best. Dec 93

★★ **Macintosh TV, Apple Computer, 408/996-1010, $2079.** As a computer, this combination computer-television-CD player is sleek but slow. You can get faster performance and better expandability from several less-expensive Performa models. Apr 94

★★★ **PowerLink Presentor, E-Machines, 503/**

continues

Practice Safe Fax.

DIRECT SALE PRICE
$249
28,800bps FAX/MODEM

With LOGICODE'S new **QUICKTEL** DATASAFE™ 28,800 fax/modem, you not only get the fastest available data transmission speeds, but you gain the added security of having total control over the use of your modem.

"Password Protection" hardware enabled to fend off data piracy.

"Call Back Security" will automatically reconnect with preapproved telephone numbers that you store in the NVRAM.

"Remote Configuration," with your hardware-stored Master Password, perform remote configuration tasks from anywhere in the world!

All **QUICKTEL** modems come equipped with these assurances:

- **Made in the USA**
- **Lifetime warranty**
- **Easy upgrade program**
- **Free lifetime tech support**
- **30-day money-back guarantee**
- **Free fax & communication software**
- **Caller ID in 28,800 and "voice" models**

OTHER QUICKTEL MAC PRODUCTS		
28,800bps	DATASAFE	$299
14,400 voice	M14V14XV*	$199
14,400bps	M1414XV	$149
96/48/24bps	M9624LX	$69

*State-of-the-art voice software available for an additional charge.

QUICKTEL DATASAFE
THE 28,800 FAX MODEM BY LOGICODE
BETTER PRODUCTS. LOWER PRICES.

V.34™

QUICKTEL LIFETIME UPGRADE

QUICKTEL LIFETIME WARRANTY

LOGICODE technology inc

TO ORDER OR FOR MORE INFORMATION, CALL TOLL FREE
1-800-735-6442
VISA AND MASTERCARD ACCEPTED

PROUDLY MADE IN THE U.S.A.

Quicktel modems from Logicode Technology, Inc., 1380 Flynn Road, Camarillo, California 93012, USA • Tel 805.388.9000 • Fax 805.388.8991
LOGICODE TECHNOLOGY AG, Steinwiesenstr. 3 • 8952 Schlieren • Switzerland • Tel 41 1 731 1570 • Fax 41 1 731 1575
©1994 Logicode. QUICKTEL and DATA SAFE are registered trademarks of LOGICODE TECHNOLOGY INC.; all other trademarks are registered to their respective companies.

Circle 297 on reader service card

Star Ratings

646-6699, $499. Simple, compact Duo dock wobbles a bit but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93

★★★ **PowerPlate, Technöggin, 513/321-1777, $169.95 to $299.95.** Line of long-lived, external PowerBook battery packs, each of which lets you work for three to five times as long as the usual PowerBook battery. Unfortunately, the System 7 power manager periodically alerts you that your battery is not charging and dims the screen though battery pack has hours of time left. Mar 94

★★★ **RCD-202, Pinnacle Micro, 714/727-3300, $2495.** Writable CD-ROM drive is good for archiving data simply and inexpensively, but it's incompatible with many hard drives. Mar 94

★★★★ **SCSI Sentry, APS Technologies, 816/483-6100, $99.** Although the price of this terminator may seem steep, this device may well be the cure for SCSI woes. Our reviewer heartily recommends it. Sep 94

★★★★ **ThinPack, VST Power Systems, 508/287-4600, $199.95.** External battery pack for PowerBooks is compact, with a lightweight design. It comes with handy power-management utilities. Mar 94

★★★★ **TurboDialer, Advanced Software, 408/733-2364, $69.95.** Automatic telephone dialer is a well-executed product, except for occasional computer noise that seeps into phone conversations. If you constantly dial phone numbers that are stored in your computer, this product will save you time and energy. Jul 94

★★★★ **Yamaha YST-M10 Powered Monitor Speakers, Yamaha, 714/522-9240, $149.95.** Powered speakers have a good balanced sound and a great volume range at an outstanding price. Apr 94

MODEMS/NETWORK HARDWARE

★★★★ **AsantéHub 1012, Asanté Technologies, 408/435-8388, $1299.** This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price. Dec 93

★★★★ **Cypress PhonePro 1.2 (1.4), Cypress Research Corp., 408/752-2700, $349 to $950.** By improving its integration with FaxPro and with PowerTalk and PowerShare, this powerful telephony software has greatly extended its business scope. May 94

★★★ **DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824.** If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. Nov 93

★★★★★ **EtherWave, Farallon Computing, 510/814-5000, $129.** If you need to expand your network at a reasonable price with minimal fuss, get this Ethernet transceiver. Instead of providing only one 10BaseT twisted-pair jack, it includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line. May 94

★★★ **OneWorld Fax, Global Village Communication, 415/390-8200, $999.** Easy-to-use network fax product lets an office share fax-sending resources without dedicating a hard drive and CPU; however, it can't receive faxes and can't queue more than one fax document at a time from a single CPU. Aug 94

★★★ **PerFit Port-A-Com, PerFit, 303/530-7333, $349.** Compact, ADB-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product at a reasonable price. Nov 93

★★★ **Spectra-Com P192mx, Bay Connection, 408/270-8070, $199.95.** If you must have absolute portability and AC power isn't available, this pocket data/fax modem can do the job. It's not that much smaller than a regular desktop modem, however. Oct 94

★★★ **SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95.** If you're looking for a high-speed internal modem for your PowerBook, and you want to save a few bucks, this modem is worth considering. Disabling its fax software solved occasional transfer problems. Nov 93

★★★★ **SupraFaxModem 288, Supra Corp., 503/967-2410, $329.95.** This 28,800-bps fax modem is a very good performer, as good as or better than 14,400-bps modems, and the price of admission isn't terribly steep. Combined with fast, stable fax software and a good terminal program, it's hard to beat. Aug 94

★★★ **Watermark Message Central 2.0.2, High Tide Software, 510/704-9927, $499.** If you're willing to put in a lot of effort, you'll find this highly sophisticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software. Jul 94

PRINTERS

★★★★ **Apple Portable StyleWriter, Apple Computer, 408/996-1010, $439.** Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges. Jan 94

★★ **Brother HJ-400, Brother International, 908/356-8880, $369.** Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. May 94

★★★★ **Color StyleWriter Pro, Apple Computer, 408/996-1010, $629.** Color printer represents one of the best values in the inexpensive color-printing market. It's fast, produces nice-looking output, and has some good features, including a great way of handling color ink cartridges. Sep 94

★★★★ **DeskWriter 310, Hewlett-Packard, 800/752-0900, $379 to $455.** Versatile, low-cost ink-jet printer is a 4.3-pound, battery-powered portable. With its 60-page sheet feeder, it's also a great desktop printer; and with a $49 color print cartridge, it offers inexpensive three-color printing. Mar 94

★★★ **HP LaserJet 4ML, Hewlett-Packard, 800/752-0900, $1279.** Primarily for those of you who use a PC or work in a small, mixed-platform environment, this energy-efficient laser printer offers automatic port and language switching, and is a good buy. Its advanced PC features may not be worthwhile for those who use Macs only. May 94

★★★★★ **LaserWriter Select 360, Apple Computer, 408/996-1010, $1599.** Low-cost, high-performance, 10-ppm printer is perfect for small LocalTalk or mixed networks. For bigger networks, consider buying more than one; they're more cost-effective than a 20-ppm printer. Apr 94

★★★ **MobileWriterP5, Mannesmann Tally Corp., 206/251-5524, $999.** Fast, portable printer is currently the only PostScript portable available. While the print quality is quite good on glossy laser paper, it's mediocre on inexpensive bond. Dec 93

★★ **Notebook Printer II, Citizen America, 310/453-0614, $399.** If weight and size are your biggest concerns in choosing a portable printer, and you print primarily in black and white, this thermal-fusion printer may be a good choice. If speed is at all an issue, however, other options may be preferable. Jun 94

★★★★ **Personal LaserWriter 320, Apple Computer, 408/996-1010, $959.** If you've been holding out for a high-quality personal laser printer that's fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. May 94

★★★★ **PowerPrint 2.5, GDT Softworks, 604/291-9121, $149.** Ingenious hardware-software combo lets you print from your Mac to almost any PC printer. It supports over 1000 printers, ranging from aging dot matrix models to the newer color ink-jet and laser printers. Sep 94

★★★ **P-Touch PC, Brother International Corp., 908/356-8880, ext. 4307, $449.95.** Versatile label printer is easy to set up and use, and produces high-quality output. The cost per label is high, though, and the documentation is weak. Sep 94

★★ **QMS ColorScript Laser 1000, QMS, 205/633-4300, $7999.** Color laser printer succeeds in combining the versatility of monochrome laser printing with attention-getting color, but if you don't need to chase rainbows right away, you might wait and see if competition drives capabilities up. Jul 94

★★★ **Silentwriter 640, NEC Technologies, 508/264-8000, $825.** With 3MB of RAM, PostScript Level 2 support, and a 6-ppm engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. Jun 94

★★★ **Smart Label Printer Pro, Seiko Instruments, 408/922-5900, $299.95.** If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. May 94

SCANNERS

★★★★ **Coolscan LS-10e, Nikon Electronic Imaging, 516/547-4200, $2600.** Compact desktop scanner for digitizing images from 35mm transparencies is slow, but delivers images good enough for newsprint publications and some catalogs. Dec 93

★★★★ **IX-4015 Color Image Scanner, Canon Computer Systems, 714/438-3000, $1169.** The price of this color flatbed scanner is competitive, and its speed and excellent bundled software make it easy to use and a good choice for the small office. If you can get by without legal-size scans, it should serve you well. Jul 94

★★★ **LightningScan Portable, Thunderware, 510/254-6581, $459.** PowerBook owners will find this hand scanner's modem- or serial-port connection, lightweight interface, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs. Dec 93

★★★★ **Mirror 800 Plus Color Scanner, Mirror Technologies, 612/830-1549, $999.** Add the NuBus JPEG board ($300) and easy-to-use 35mm transparency scanning module ($599) and you get a nifty—if slow—desktop scanning package for a reasonable price. Jan 94

★★★ **ScanMaker 35t, Microtek, 310/297-5000, $1999.** Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak. Dec 93

SYSTEMS/STORAGE

★★★★ **Alacrity PM 6100, KS Labs, 614/374-5665, $165.** Installing a clock booster is the quickest, easiest, and cheapest way to extract more power from Apple's

continues

Macworld

Subscriber Courtesy Voucher

As a subscriber you are entitled to receive a full year of Macworld for 60% off the annual cover price of $59.40. You save $35.40!

Please Check: ☐ 12 issues/$24. Bill me later.

Name

Company

Address

City, State, Zip

Allow 4 to 6 weeks for delivery. For Mexican and Canadian subscriptions, please add $18 per year for shipping. Add $70 annually for all other foreign countries.

Savings Statement

Annual Cover Price

$59.40

Regular Subscription Price

$30.00

Your Special Rate

$24.00

4CMT0

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

Billions And Billions And Billions And Billions...of Colors.

Introducing the ScanMaker® III, the first 36-bit, single-pass, color flatbed scanner that's also the best value in the cosmos.

The ScanMaker III's 36-bit color scanning capability allows it to capture an astronomical 68 billion colors. It has an optical density that reaches 3.4, unprecedented for a flatbed scanner, which results in a vastly expanded dynamic range. What all this means is, that your scanned images will have smoother color gradations, denser color values and substantially increased detail in shadow and highlight areas.

Performing like scanners priced somewhere in the stratosphere, the ScanMaker III's scans are so sharp, you will actually reduce the amount of time spent in post-scanning software to sharpen images. And its optical resolution of 600 x 1200 dpi (enhanced through software to 2400 x 2400 dpi) is great for enlarging small originals.

ScanMaker III shown with optional Transparent Media Adapter for scanning transparencies up to 8" x 10".

For accurate scanned color, DCR™ (Dynamic Color Rendition), Microtek's award-winning color calibration/correction system calibrates the ScanMaker III to a photographic industry-accepted calibration target creating a custom profile of your specific scanner. This ensures the most accurate color possible as you scan an image, so you spend a lot less time adjusting the color of your scans to match your originals.

Windows users also get Microtek's ScanWizard™, a drag and drop application for instant image management, faxing and printing. The ScanMaker III also includes the full-version of Adobe Photoshop for complete image editing and color separations.

See why Microtek is the universally accepted leader in image quality. For more information about the ScanMaker III, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

MICROTEK
Better Images Through Innovation.

The following are trademarks or registered trademarks of their respective companies: Adobe Photoshop of Adobe Systems, Inc.; Windows of Microsoft Corporation, Microtek, ScanMaker, DCR, Dynamic Color Rendition, ScanWizard of Microtek International, Inc. All other trademarks or registered trademarks are the property of their respective holders. Specific software bundles are subject to change without notice. SMIIIEUV41594

Circle 287 on reader service card

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld

SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

Billions And Billions And Billions And Billions...of Colors.

Introducing the ScanMaker® III, the first 36-bit, single-pass, color flatbed scanner that's also the best value in the cosmos.

The ScanMaker III's 36-bit color scanning capability allows it to capture an astronomical 68 billion colors. It has an optical density that reaches 3.4, unprecedented for a flatbed scanner, which results in a vastly expanded dynamic range. What all this means is, that your scanned images will have smoother color gradations, denser color values and substantially increased detail in shadow and highlight areas.

Performing like scanners priced somewhere in the stratosphere, the ScanMaker III's scans are so sharp, you will actually reduce the amount of time spent in post-scanning software to sharpen images. And its optical resolution of 600 x 1200 dpi (enhanced through software to 2400 x 2400 dpi) is great for enlarging small originals.

ScanMaker III shown with optional Transparent Media Adapter for scanning transparencies up to 8" x 10".

For accurate scanned color, DCR™ (Dynamic Color Rendition), Microtek's award-winning color calibration/correction system calibrates the ScanMaker III to a photographic industry-accepted calibration target creating a custom profile of your specific scanner. This ensures the most accurate color possible as you scan an image, so you spend a lot less time adjusting the color of your scans to match your originals.

Windows users also get Microtek's ScanWizard™, a drag and drop application for instant image management, faxing and printing. The ScanMaker III also includes the full-version of Adobe Photoshop for complete image editing and color separations.

See why Microtek is the universally accepted leader in image quality. For more information about the ScanMaker III, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

MICROTEK
Better Images Through Innovation.

The following are trademarks or registered trademarks of their respective companies: Adobe Photoshop of Adobe Systems, Inc.; Windows of Microsoft Corporation; Microtek, ScanMaker, DCR, Dynamic Color Rendition, ScanWizard of Microtek International, Inc. All other trademarks or registered trademarks are the property of their respective holders. Specific software bundles are subject to change without notice. SMIIIEUV41594

Circle 287 on reader service card

Star Ratings

entry-level Power Mac. Oct 94

★★★ **Conley SR2 RAID System, Conley Corp., 212/682-0162, $25,335.** While RAID technology is typically praised for its fault-tolerance rather than its speed, this high-performance storage system proves that you can have both. For critical tasks requiring redundancy and round-the-clock operation, this is one of the best Mac RAID systems shipping. Sep 94

★★★ **EtherDock, E-Machines, 408/541-6100, $699.** Heavy-duty Duo docking option is equipped with a full set of 11 ports, including an Ethernet port. The locking mechanism is alarmingly wobbly—although reliable enough to ensure a good connection. May 94

★★★ **Expert Pad PI-7000, Sharp Electronics Corp., 800/237-4277, $899.** Personal digital assistant features the advantages of the Newton, in a better industrial design and at a comparative price. If the battery lasted longer and the message network were implemented, the PDA revolution could begin. Feb 94

★★ **HP Optical Disk Library 10LC, Hewlett-Packard, 800/752-0900, $9495.** Optical jukebox may fill the need for 10 gigabytes of online storage, but its performance is poor, and the software lacks the features needed for adequate management. Jan 94

★★★★ **LC 575, Apple Computer, 408/996-1010, $1699.** For students and small-business professionals who want high power and the convenience of having everything integrated into one case, this 33MHz 68040 system is an ideal choice. Jun 94

★★★ **Newton MessagePad 110, Apple Computer, 408/996-1010, $599.** This is the personal digital assistant that Apple should have shipped in August 1993, with improved handwriting recognition, including deferred and letter-by-letter recognition. It also has more memory, longer battery life, and a more efficient design. Aug 94

★ **NuTek Duet, NuTek USA Corp., 408/973-8799, $2996.** Mac workalike is both a PC and a Mac in a single box, but because of many incompatibilities and problems, the Duet is not a computer anyone should consider using for serious work. Feb 94

★★★★ **OrangePC Model 200 Series, Orange Micro, 714/779-2772, $1139 to $3237.** If your goal is to get a Mac that runs Windows as fast as a PC, you can't get there from here. If your goal is to get business-level performance for day-in, day-out use, these PC coprocessor cards are probably your best choice. Aug 94

★★★★ **PLI Infinity 270 Turbo, PLI, 510/657-2211, $651.** This 270MB SyQuest drive is fast, reliable, and a very good product. The cost of the medium is competitive with that of optical drives. Sep 94

★★★★ **PowerBook 140 F/25 Upgrade, Digital Eclipse Software, 510/547-6101, $399.** By changing the oscillators and adding an FPU, Digital Eclipse changes PowerBook 140s into 170s, minus the active matrix screen. While the upgrade seems expensive, it's the only way to extend the viability of a 140. Dec 93

★★★ **PowerBook 540c, Apple Computer, 408/996-1010, $4839.** The prestige PowerBook du jour, this sleek, curvy and futuristic-looking notebook makes a good computer for both on-the-road and in-the-office use. Its nonstandard battery, memory, and Ethernet ports are not ideal features, however. Oct 94

★★★★ **PowerBook Duo 270c, Apple Computer, 408/996-1010, 4/240 $3099.** Notebook computer meets all the demands of power users; it weighs less than five pounds, features a color active matrix display, and offers longer battery life. The lack of a floppy drive can be inconvenient, though. Feb 94

★★★★ **PowerBook Duo 280c, Apple Computer, 408/996-1010, $3759.** If you travel a lot, this notebook computer is hands down the best Mac to get. It offers close to the power of a Quadra 650 in a subnotebook. Oct 94

★★ **PowerBook Duo Dock II, Apple Computer, 408/996-1010, $969.** Apple has added Ethernet to this full-featured docking station, but installing NuBus cards is still absurdly difficult. If you don't need NuBus expansion, consider other options. Oct 94

★★★★ **Power Macintosh 6100/60, Apple Computer, 408/996-1010, base model $1819.** Given its price and performance, this Power Macintosh is hard to resist. When developers offer in PowerPC format the software that most business users run daily, this should be a system that will give you power to spare. Jun 94

★★★★★ **Power Macintosh 7100/66, Apple Computer, 408/996-1010, $2899.** Midrange Power Mac makes an outstanding workstation whose power should last for several years. The price is nothing to take lightly, but this system delivers every dollar's worth. Aug 94

★★★★ **Power Macintosh 8100/80, Apple Computer, 408/996-1010, $4249.** While this system doesn't quite offer the excellent price/performance ratio of the other available Power Macs, you should consider it if you're a high-end user moving your work over to RISC-based computing. Aug 94

★★★ **Power Macintosh Upgrade Card, Apple Computer, 408/996-1010, $699.** Current 33MHz 040 machines will get the best bang for the buck with this card, which is a less expensive upgrade path than a standard motherboard replacement. However, other Macs won't realize as much of a performance gain. Oct 94

★★★★ **Quadra 605, Apple Computer, 408/996-1010, 4/80 $979.** Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of a standard entry-level 486SX-based Windows PC. Mar 94

★★★★ **Quadra 840AV, Apple Computer, 408/996-1010, 8/230 $4069.** Technological tour de force uses a 40MHz 68040 and an AT&T 3210 digital signal processor, and is brimming with sophisticated speech-recognition and audiovisual technology. Beware of some hardware and software incompatibilities. Dec 93

★★★ **SCSI MicroDock, Newer Technology, 316/685-4904, $175.** Tiny Duo docking station is just under 4½ ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. May 94

★★★★ **SledgeHammer2000FMF, FWB, 415/474-8055, $3179.** RAID drive is both fast and inexpensive. Although it can be a bit noisy when accessing data, it's a good deal. Apr 94

★★★ **Turbo 040, DayStar Digital, 404/967-2077, $1899.** This accelerator card is equipped with the fastest 68040 chip available and is as fast as or faster than any Macintosh in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. Dec 93

VIDEO/DISPLAY

★★★ **Apple Macintosh Display Card 24AC, Apple Computer, 408/996-1010, $1579.** 24-bit accelerated graphics card offers a satisfactory price/performance ratio, although it can't switch resolutions from the keyboard. Oct 94

★★★ **Apple QuickTake 100 for Macintosh, Apple Computer, 408/996-1010, $749.** If you're in the market for a medium-quality, digital color camera that costs less than $1000, this is the best deal around. But if you're not in a hurry, you may want to wait until some of the camera's more obvious problems, such as its fixed-focus lens and lack of a zoom option, are ironed out. Jul 94

★★★ **AudioVision 14 Display, Apple Computer, 408/996-1010, $769.** Monitor integrates audio and video with built-in speakers that produce surprisingly rich, full-bodied sound. The display, while nice, is small for multimedia work. Dec 93

★★★ **Editing Aces Suite, RasterOps, 801/785-5750, $3899.** Video professionals can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with these products. Despite flaws, this package represents a step forward in QuickTime technology. Nov 93

★★★ **Intellicolor Display/20, Radius, 408/434-1010, $2399.** Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk, the included Intellicolor software, which lets you control the settings of your display, doesn't offer much added value. Apr 94

★★★ **L-TV Portable, Focus Enhancements, 617/938-8088, $299.** Sturdy, inexpensive, external TV-converter plugs into your Mac and converts video output to NTSC. It provided a crisp, clean image, but mild flickering and conspicuous shimmers were persistent. Aug 94

★★★ **L-TV Pro NuBus, Focus Enhancements, 617/938-8088, $399.99.** NuBus card converts your Mac's RGB video signal to NTSC so you can use your Mac with a TV or VCR. It supports a wide range of Macs, but the image has some flicker and distortion, despite flicker-filtering software. Aug 94

★★★★ **MovieMovie, Sigma Designs, 510/770-0100, $349.** This 7-inch NuBus video-capture board may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. Dec 93

★★★ **The Presenter Plus Mac/PC, Consumer Technology Northwest, 503/643-1662, $429.** Small, external TV-converter supports output to television from most Macs with built-in video. It does a barely passable job of providing a stable image. Aug 94

★★★ **QA-350 LCD, Sharp Electronics Corp., 800/237-4277, $2495.** At less than half the cost of a typical active matrix LCD panel, this passive matrix projection panel offers an economical alternative for presenters who don't need multimedia capability. Jul 94

★★★★ **Radius LeMansGT, Radius, 408/434-1010, $2499.** Fast, 24-bit accelerated graphics card has automatic 30-bit CLUT calibration and can switch resolution on the fly via a pop-up menu. Oct 94

★★ **RasterOps Horizon 24, RasterOps, 408/562-4200, $1999.** This 13-inch 24-bit accelerated graphics card is slower than anticipated and overpriced. The ROM can, however, be upgraded via software. Oct 94

★★★ **Simply TV, E-Machines, 408/541-6100, $439.** Easy-to-install video card plugs snugly into a PDS slot, and allows you to use your Mac with a television for display. The image is impressively flicker-free, but the resolution is limited to 256 colors. Aug 94

★★★★ **SuperMac Spectrum Power•1152, SuperMac, 408/541-6100, $1399.** Fast, relatively inexpensive, 24-bit accelerated graphics card can switch resolutions from the keyboard and offers zoom and pan options. Oct 94

★★ **Tornado Graphics Card, Mirror Technologies, 612/832-5622, $699.** Inexpensive 24-bit accelerated graphics card has zoom and pan options but is relatively slow. Oct 94 m

The only statistics package you'll ever need.

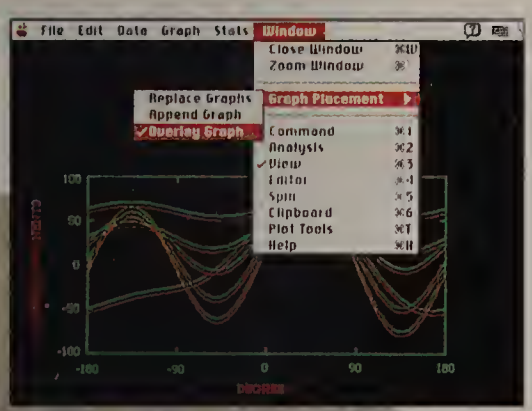
MACWORLD MW EDITORS' CHOICE

NEW SYSTAT 5.2

"For Mac-based statistical analyses and presentations, choose SYSTAT."
P. Wayner, **BYTE**, 1-92

The most comprehensive and powerful statistics software for Macintosh now provides the most advanced multivariate general linear hypothesis program. Yet it remains the easiest to use–with a friendlier-than-ever interface.

New SYSTAT 5.2 for Macintosh enables you to perform statistical analyses you can't do with any other Macintosh statistics program. It offers more advanced statistical procedures, more types of graphs, and greater data management capabilities.



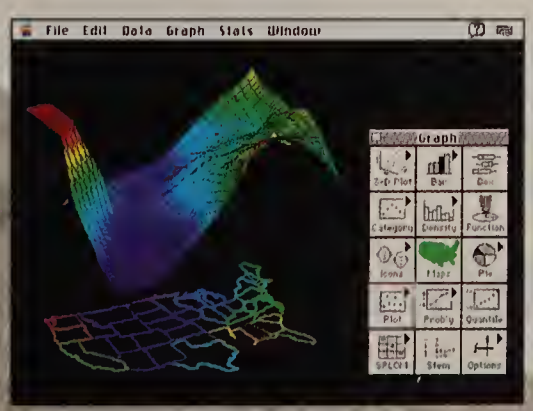
More statistics, from basics to the most sophisticated

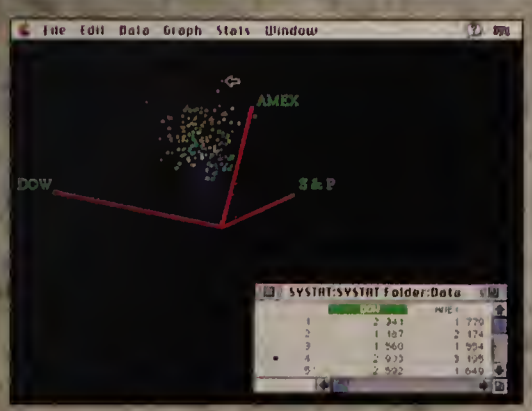
A full range of univariate and multivariate statistics–including multidimensional scaling and nonlinear modeling.

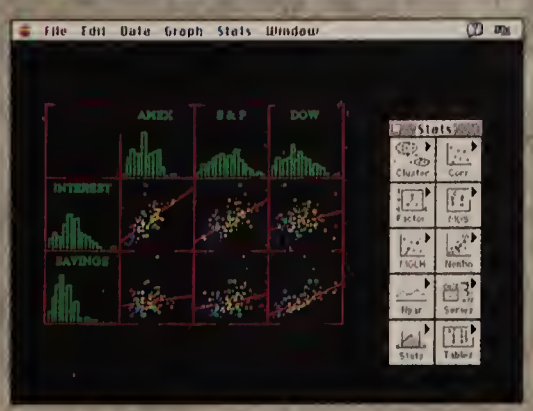
Basics include descriptive statistics, *t* tests, correlations, auto-correlations, simple regression, and frequency tables. With a few clicks you can turn each statistic into a graph.

SYSTAT offers the most advanced multivariate general linear hypothesis program available for Macintosh. SYSTAT can estimate and test any univariate or multivariate model including:

- REGRESSION: simple linear, multiple linear, stepwise, polynomial, mixture, and weighted;
- ANOVA (analysis of variance): one-way, two-way, factorial, nested, unbalanced, post-hoc tests, mixed, repeated measures, split plot, multivariate, means model coding;
- MULTIVARIATE: discriminant analysis, principal components, canonical correlations.







Just point and click

SYSTAT is truly Mac-like. Just point and click: SYSTAT works with the pull-down menus, dialog boxes, icons, buttons and graphics tools you're accustomed to on the Mac.

The most graphics

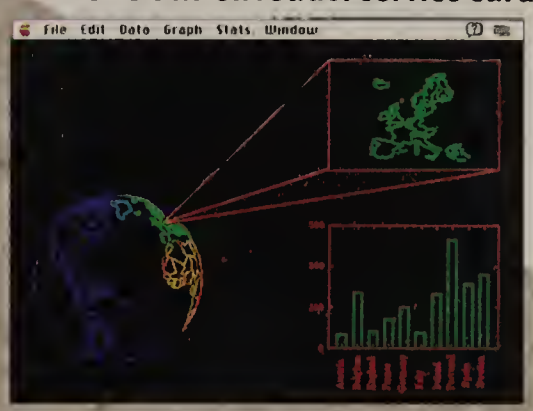
No other statistical or graphics package can produce all the scientific and technical graphs available on SYSTAT–nor surpass its ease of use. And you can save SYSTAT graphics and data in QuickTime™ movie file formats. Graphics options include:

- linear, quadratic, step, spline, polynomial, LOWESS, exponential, and log smoothing
- confidence intervals and ellipses
- scatterplot matrices
- single, multiple, stacked, and range bar graphs
- single and grouped box plots
- stem-and-leaf diagrams
- histograms
- log and power scales
- maps with geographic projections
- Chernoff faces
- pie charts
- contour plots
- control charts
- 3-D data and function plots
- complete color spectrum

For more information, upgrades, and demo disks phone:

708-864-5670

Circle 29 on reader service card



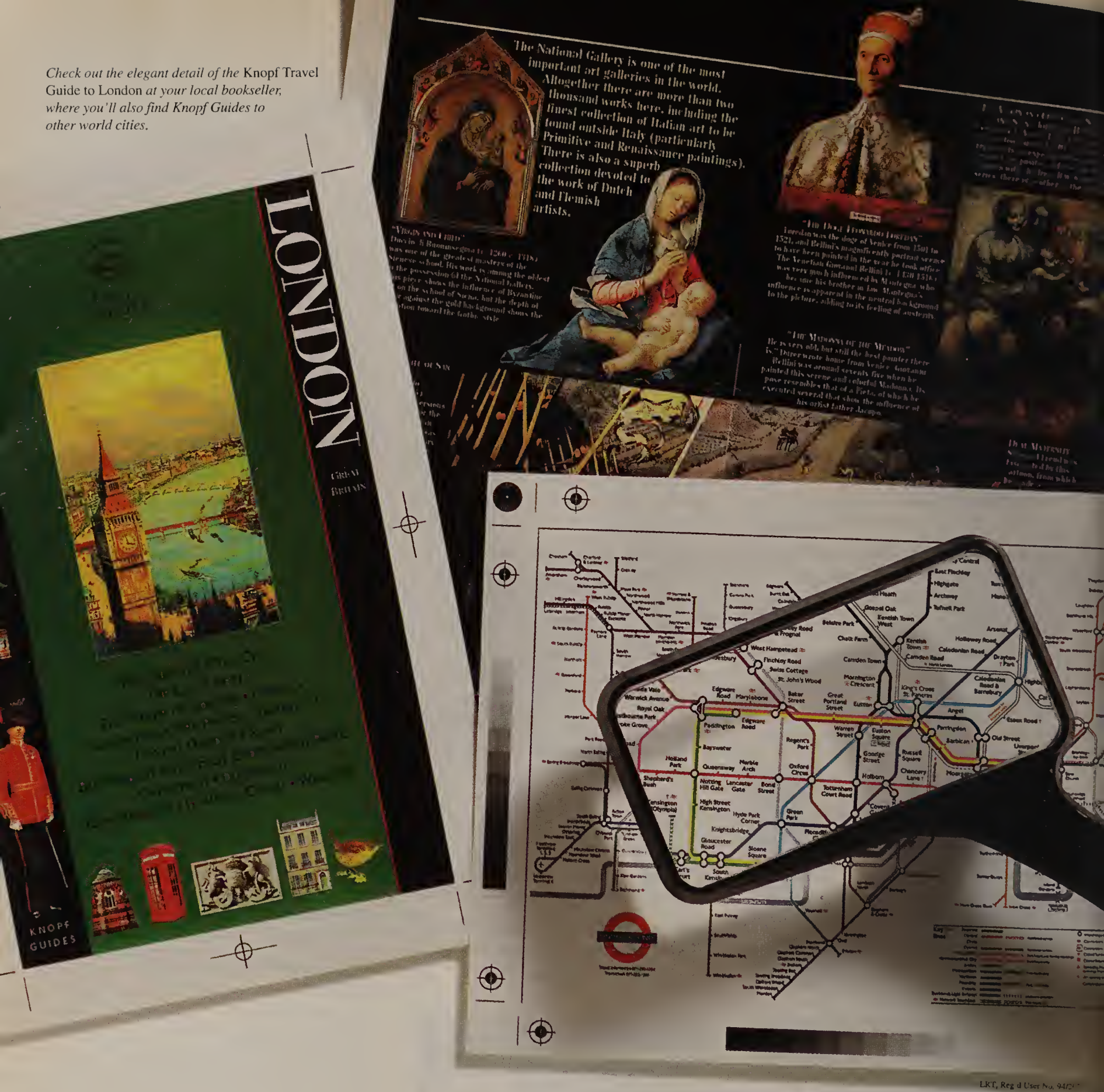
SYSTAT®

For more information call or write: **SYSTAT, Inc.**, 1800 Sherman Avenue, Evanston, Illinois 60201-3793. Tel: 708.864.5670, Fax: 708.492.3567

Australia: Hearne Marketing 61.3.8661766, **Holland:** Oasis 31.34.0266336, **Denmark:** Agrolab 45.64.406575, **France:** Deltasoft 33.76.418508, **Germany:** STATCON 49.55.4272075, **Italy:** PiSoft 39.587.213640, **Japan:** HuLinks 81.33.5902311, **New Zealand:** Hoare Research 64.7.8562675, **Poland:** COMPANION 48.12.360791, **Spain:** AddLink 34.3.4590722, **Switzerland:** Fritschy & Partner 41.31.3125151, **SYSTAT UK:** 44.81.4620093

© 1993 SYSTAT®, Inc.

Check out the elegant detail of the Knopf Travel Guide to London *at your local bookseller, where you'll also find Knopf Guides to other world cities.*



Color is color, until you see the fine print.

Then you'll know it's Phaser Color. Eyeball it up close. Check out the spotless color of the new Phaser™440, the newest continuous tone color printer from Tektronix. It dots i's and crosses t's with the precision of TekColor™ Photofine™ and true Level 2 Adobe® PostScript.™ Stunning overhead transparencies. Matchless pre-film proofs. All printed to Pantone®* Color perfection. And it's fast, processing images at RISC-speed, it snaps out 8½" x 11" full bleed prints. PCs, Macs, workstations, networks: it supports them all—simultaneously. And it's from Tektronix, the Fortune 500 leader, where quality in workgroup color printers starts at only $2,995 and persists to the last detail.

© 1994 Tektronix, Inc. All rights reserved. Knopf Travel Guide to London reprinted with permission. London: Wallace Collection, Tate Gallery, National Gallery, London Transport. Paris: Gallimard Jeunesse. New York: Random House. *Pantone Inc.'s check-standard trademark for color reproduction.

Tektronix

Free output sample, 800/835-6100, Ext. 1

Circle 143 on reader service card

Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

Selected and edited by Charles Barrett

The following listings include both time-sensitive promotions and open-ended offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in *Macworld's Reviews* (products rated ★★ or lower are not eligible for inclusion), have been selected as an Editors' Choice, or have won a World-Class award. In some cases, the editorial evaluation quoted is for an earlier product version. The ◀ symbol indicates that the product is Power Mac related.

When placing an order, please mention that you saw the offer in *Macworld*. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the *Streetwise Shopper* editor with particulars.

BUNDLES

◀ **Canvas 3.5 + Clip Art + TrueType Fonts** Deneba Software is including 10,000 clip art images cataloged in an Image Browser graphics database and a cross-platform collection of 2000 text, display, and novelty TrueType fonts on CD-ROM with all versions of its $399 Canvas draw program (Jan 94 ★★★ for the 680X0 version). Call 305/596-5644 for more information.

Créarts/Texas + Créarts Potpourri Clip Art Aktulun Design is offering its $59 Texas collection of 44 EPS images plus its $39 Potpourri collection of 60 EPS images for $69. Call 512/447-6522 to order or to obtain a free interactive demo disk. *Offer expires 10/30/94.*

DynaMO 230 + Macromedia Director 4.0 Fujitsu Computer Products is bundling Macromedia's $1195 multimedia/animation program (Sep 94 ★★★★) with its $1295 DynaMO magneto-optical external drive (includes optical disk stand, power supply, software drivers and formatter, and 25-pin SCSI cable). Available through Rocky Mountain Computer Outfitters, 800/908-0009.

FileMaker Pro 2.1 + PowerAgent 1.1 SouthBeach Software is offering its $159 PowerAgent for accessing and distributing FileMaker Pro data, or running its scripts, for $49 (regularly $89.95). PowerAgent also automates AppleScript and distributes information using PowerTalk and QuickMail. To qualify, the latest version of FileMaker Pro must also be purchased ($269, or upgrade for $89 and sidegrade for $99). Available through MacWarehouse (800/255-6227; ask for #AAP 0012). For more information about PowerAgent call 305/858-8416. *Offer not to expire before 12/31/94.*

Kai's Power Tools 2.1 + Color It 2.0 HSC Software is bundling MicroFrontier's $149.95 Color It image-editing application (Apr 93 ★★★ for version 2.0.1) with the latest version of its $199 Kai's Power Tools collection of plug-in extensions (May 94 ★★★★★ for version 2.0a) for such applications as Adobe Photoshop and Fractal Design. Call 310/392-8441 for more information.

PenMouse Tablet + Dabbler 1.0 Kurta Corporation is including a free copy of Fractal Design Corporation's $99 Dabbler natural-media draw and paint application (Nov 94 ★★★) with its $249 PenMouse cordless pen, 4-by-5-inch drawing tablet, driver software, and accessory package. Call 800/445-8782 for nearest reseller. *Offer expires 12/31/94.*

◀ **PressView 21•T Display System** SuperMac Technology is including a $799 tristimulus SuperMatch Display Calibrator Pro (Nov 94 "Big Screen Close-up" Editors' Choice) with its new $3999 21-inch diagonal-aperture-grill display, which supports a top resolution of 1600 by 1200 when used with SuperMac's Thunder II GX•1600 graphics card. PressView display-control software and a ColorShield antiglare display hood are also included. Call 800/334-3005 for more information.

COMPETITIVE UPGRADES

Apple IP Gateway Apple is offering this $249 AppleTalk software server to owners of Apple Remote Access Personal Server 2.0.1, MultiPort Server 2.0.1, or Apple Internet Router 3.0.1 for $69 with proof of purchase. In combination with Apple Remote Access products and MacTCP, this gateway enables easy-to-use dial-up access to IP-based services such as Internet. Call 408/862-3385 for more information.

Drive7 3.0 Casa Blanca Works is offering this $89.95 drive-formatting and -acceleration program (Nov 94 ★★★★) to owners of any other formatting utility for $40. Call 415/461-2227 for further information.

◀ **First Things First Proactive 1.1** Visionary Software is offering this $149 scheduling program (Nov 94 ★★★) in 680X0 and PowerPC versions to users of competing products for $59 ($39 to current users). Call 800/877-1832 for more information.

◀ **OmniPage Professional 5.0** Caere Corporation is offering this native-mode version of its $695 OCR package (Nov 94 ★★★★; Nov 93 "OCR: The Recognition You Deserve" Editors' Choice for version 2.1) for $199 to users of competitive products (Xerox TextBridge owners can upgrade for $239). Call 800/535-7226 for more information.

SPECIAL DISCOUNTS/REBATES

Day-to-Day Portfolio Software is offering this $149.95 bundle for $89.95 (the Contacts and Calendar modules are available separately for $49.95 each; the Notepad for $29.95). The bundle consists of the following: Day-to-Day Contacts (formerly Dynodex) address-book manager (Sep 94 ★★★ and 1993 World-Class for Dynodex 3.5); Day-to-Day Notepad (formerly DynoNotepad) for creating outlines, to-do lists, and notes; a new Day-to-Day Calendar module; and a leather organizer. Day-to-Day Contacts allows you to view contacts without opening the application, and features a linking button that automatically creates new Notepad files to keep ongoing records of contact information. Call 800/329-8632 to order. *Offer not to expire before 12/31/94.*

◀ **Microsoft Office 4.2** Microsoft Corporation is offering this upgrade of its integrated business-application software for $259 (regular nonupgrade street price is approximately $499) to users of Microsoft Works, Excel, PowerPoint, or Word with the return of a $40 coupon that accompanies the product. Office's applications include Excel 5.0, PowerPoint 4.0, Word 6.0, and a workstation license for Microsoft Mail 3.2. A free copy of Connectix Corporation's $99 RAM Doubler memory-enhancement product will also be included through 3/31/95. A second coupon accompanying the 680X0 version entitles you to a free copy of the Power Mac version prior to 11/1/94, at which time both versions are to ship in the same box. Call 800/622-4445 for rebate information. *Offer expires 12/31/94.*

Note-it; Souvenir ComposeTel is offering a special introductory price of $44 on its $79 Note-it electronic sticky-note program, which allows notes to contain styled text with embedded sounds, PICT images, or QuickTime movies; and $49 on its $89 Souvenir networkable contact manager, which is always available by pressing the ⌘ key twice. Call 800/283-5872 (415/327-0744 if in California) for more information. *Offer expires 10/31/94.*

Now Utilities 5.0 Now Software is offering a special introductory price of $69.95 ($89.95 regular estimated street price) on the new version of this system utility collection (Aug 93 ★★★★ for version 4.0.1). Special multipack prices are also available. Call 800/689-9427 for more information. *Offer not to expire before 10/31/94.*

Signature Series (Professional Stock Photography) Digital Stock is offering an introductory price of $249 per disc (regularly $349) for this series of photo CDs that highlights the best work of noted photographers in distinct subject areas. Released so far are Western Scenics (Mike Sedam), Undersea Textures (Robert Yin), and Food (Joshua Ets-Hokin). Each disc contains 100 royalty-free photos together with a hi-res, color contact sheet. Call 800/545-4514 to order and for more information. *Offer not to expire before 10/15/94.*

Summagraphics Plotters Summagraphics is offering reduced list prices on the following series of pen plotters: HiPlot 7000, D- and E-size multipen DMP-160, and single-pen DMP 60SP. Hi JetPro C-size monochrome ink-jet plotters are also included. The $3595 A- to D-size HiPlot 7100 is $2499, and the $4695 A- to E-size 7200 is $2999. The $2795 DMP-161 is $1799, the $3595 DMP-162 is $2199, and the $5495 162R is $3999. The $1995 DMP-61SP is $1399, and the $2795 DMP-62SP is $1799. The $1795 HI JetPro V50 is $1499, and the $2495 V100 is $1999. Call 512/835-0900 for more information. *Offer expires 10/31/94.* m

He eats your storage space

FOR LUNCH

and your money

FOR DINNER.

(filus humongous)

You're well acquainted with this megabyte-eating beast.

But perhaps you're not yet familiar with DynaMO,™ the magneto-optical solution that eliminates the horrors of data storage.

Drive Specifications	
Capacity	128-230 MB
Data transfer rate	2.1 MB/s (max.)
Average seek time	30 ms (typ.)
Rotational speed	3,600 rpm

Like Syquest, with DynaMO you save your files to removable cartridges. But unlike Syquest, you don't have to break the bank each time around. And the 128 and 230 MB industry standard 3.5-inch cartridges you use aren't nearly as vulnerable. In fact, Fujitsu cartridges come with a lifetime warranty.

© 1994 Fujitsu. All rights reserved. DynaMO is a trademark of Fujitsu Computer Products of America, Inc. All brand names and product names are trademarks of their respective holders.

Turbo MO performance By **CharisMac Engineering**

Our Macintosh version comes with Turbo Mo software for up to 60% faster performance.

There's nothing frightening about setting-up DynaMO either. You just plug the drive into your PC or Macintosh.

Get the data on DynaMO by calling **1-800-831-4094.** Or request information by fax at 1-408-428-0456 (document 1368).

We'll show you how to enjoy some monstrous savings.

FUJITSU

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

Circle 202 on reader service card

Macworld

Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.

Page No.	Advertiser	Reader Srvc. No.	Phone
165	Adam Software Inc.	22	800/408-ADAM
68	Agfa	158	800/685-4271
78	Agfa	90	800/685-4271
141	Agfa	43	800/685-4271
28	Agio	—	800/688-2446
210-211	Alliance Peripheral Systems	62	800/874-1428
171-172	America OnLine	—	800/827-6364
116-117	American Power Conversion	72	800/788-2208
10	Anthro	—	800/325-3841
11	Apple Computer	—	800/590-5005
76	Apple Computer	—	—
26	Attain Software	—	617/776-1110
220-221	BottomLine Distribution	63	800/622-8721
222	BottomLine Distribution	65	800/622-8721
134	Charles Schwab	277	800/435-9258
155-156	Citibank	—	800/374-9999
27	Claris Corporation	—	800/544-8554
58	Claris Corporation	—	800/544-8554
167	Claris Corporation	—	—
206-207	ClubMac	96	800/ CLUB MAC
101	CompuServe	66	800/848-8199
83-85	Computer Discount Warehouse	2	800/861-4CDW
44	Connectix	189	800/950-5880
46	Connectix	191	800/950-5880
164	Connectix	192	800/950-5880
175	Corel Corporation	78	800/836-3729
226	CRA Systems Inc.	20	800/375-9000
66	CTX International	38	909/595-6146
47	Dantz Development	26	510/253-3000
60	DataViz	79	800/733-0030
146-147	Dayna Communications	161	800/443-2962
32	Delphi	173	800/695-4005
56	Delrina Corporation	137	800/268-6082
18	Deneba Software	57	—
214	Digital Axis	83	800/747-7555
215	Direct Connections	121	800/572-4305
213	Educational Resources	210	800/624-2826
257	Educorp	157	800/843-9497
12	Engineered Software	12	910/299-4843
6-7	Epson America	—	800/BUY-EPSON
208-209	Express Direct	81	800/765-0020
64	Fargo Electronics	172	800/327-4622
9	Fractal Design	190	800/647-7443
194	Fujitsu	202	800/831-4094
14	Fusion Digital Media	274	800/996-0011
8	GDT Softworks	32/42	800/663-6222
21	Globalink Inc.	223	800/767-0035
137	Graphix Zone	—	—
185	Graphsoft	46	410/290-5114
93	Hewlett Packard	11	—
142	HSC Software	5	310/392-8441
30-31	IBM	179	800/1IBM-6676
138	IDG Books	—	800/762-2974
176	Insignia Solutions	68	800/848-7677
143	Intuit/Chipsoft	—	800/964-1040
BC	Kensington Microware Ltd.	—	800/535-4242
15-17	La Cie	52	800/999-1157
45	LaserMaster	102	800/950-6868
151	LaserMaster	103	800/950-6868
187	Logicode Technology	297	800/735-6442
224-225	Mac Bargains	70	800/619-9091
71-73	MacConnection	—	800/800-3333
199-205	MacMall	131	800/222-2808
14	MacTable/ScanCo	—	800/722-6263
216-217	MacWarehouse	150	800/255-6227
128-131	Macworld Expo SF	—	617/361-8000
253	Macworld	—	—
218	MegaHaus	245	800/786-1184
40	MicroNet Technology, Inc.	139	800/800-DISK
CV2-1	Microsoft	—	—
22-23	Microsoft	—	—
102-103	Microsoft	—	—
189	Microtek Lab Inc.	287	800/654-4160
152	Mirror Technologies	58	800/643-4142
170	Mobius Technologies	109	800/800-4334
28	Momentum, Inc.	8	808/263-0088
2-3	NEC Technologies	15	800/NEC-INFO
IBC	NEC Technologies	16	800/NEC-INFO
42	Nisus	123	800/647-8794
111	Now Software	—	800/237-2078
20	Orange Micro Inc.	33	714/779-2772
94-95	Pinnacle Micro	115	800/553-7070
62	Polaroid	295	—
223	Pro Direct	135	800/524-9952
159	Proxima Corporation	47	800/447-7694
254-256	Quality Computers	263	800/777-3612
80	Samsung Electronics	198	800/933-4110
112-113	Scitex	233	800/685-9462
161-162	Signature Software	300	800/925-8840
13	Software Ventures	213	—
183	Statsoft	99	918/583-4149
48	Strata	114	800/869-6855
49	Strata	116	800/869-6855
166	SunStar	246	800/660-4480
219	SuperMicro	126	800/352-3415
50-51	Symantec Corporation	—	—
191	Systat	29	708/864-5670
212	TechWorks	244	800/395-7924
192	Tektronix	143	800/835-6100
180-181	Texas Instruments	266	800/527-3500
227	The Mac Zone	71	800/436-0606
24	Umax Technologies	196	800/769-7848
168	ViewSonic	237	909/869-7976
12	VST Power Systems	73	508/287-4600
120-121	WordPerfect Corporation	—	800/526-7820
29	Xante Corporation	112	800/926-8839
74	Xante Corporation	111	800/926-8839

Macworld Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

Page No.	Advertiser	Reader Srvc. No.
SOFTWARE		
BUSINESS		
26	Attain Software	—
134	Charles Schwab	277
56	Delrina Corporation	137
21	Globalink Inc.	223
CV2-1	Microsoft	—
22-23	Microsoft	—
102-103	Microsoft	—
161-162	Signature Software	300
183	Statsoft	99
191	Systat	29
120-121	WordPerfect Corporation	—
CAD/CAM		
12	Engineered Software	12
185	Graphsoft	46
CD ROM		
175	Corel Corporation	78
257	Educorp	157
COMMUNICATION		
60	DataViz	79
56	Delrina Corporation	137
13	Software Ventures	213
EDUCATION		
165	Adam Software Inc.	22
213	Educational Resources	210
254-256	Quality Computers	263
FONTS		
161-162	Signature Software	300
GRAPHICS/DTP		
78	Agfa	90
58	Claris Corporation	—
175	Corel Corporation	78
9	Fractal Design	190
14	Fusion Digital Media	274
142	HSC Software	5
112-113	Scitex	233
48	Strata	114
49	Strata	116
MULTIMEDIA		
165	Adam Software Inc.	22
14	Fusion Digital Media	274
PERSONAL		
143	Intuit/Chipsoft	—
POWERBOOK		
44	Connectix	189
50-51	Symantec Corporation	—
STATISTICAL		
183	Statsoft	99
191	Systat	29
UTILITIES		
164	Connectix	192
44	Connectix	189
47	Dantz Development	26
8	GDT Softworks	32/42
176	Insignia Solutions	68
111	Now Software	—
50-51	Symantec Corporation	—
WORD PROCESSING		
42	Nisus	123
120-121	WordPerfect Corporation	—
HARDWARE		
BOARDS		
170	Mobius Technologies	109
20	Orange Micro Inc.	33
212	TechWorks	244
CD ROM		
257	Educorp	157
219	SuperMicro	126
COMPUTER SYSTEMS		
76	Apple Computer	—
226	CRA Systems Inc.	20
208-209	Express Direct	81
DIGITIZERS/SCANNERS		
68	Agfa	158
141	Agfa	43
214	Digital Axis	83
6-7	Epson America	—
194	Fujitsu	202
189	Microtek Lab Inc.	287
152	Mirror Technologies	58
62	Polaroid	295
112-113	Scitex	233
24	Umax Technologies	196
DISPLAY		
226	CRA Systems Inc.	20
66	CTX International	38
214	Digital Axis	83
152	Mirror Technologies	58
2-3	NEC Technologies	15
IBC	NEC Technologies	16
159	Proxima Corporation	47
80	Samsung Electronics America, Inc.	198
168	ViewSonic	237
EXPANSIONS/UPGRADES		
212	TechWorks	244
FURNITURE		
28	Agio	—
HARD DISKS/STORAGE		
210-211	Alliance Peripheral Systems	62
220-221	BottomLine Distribution	63
222	BottomLine Distribution	65
206-207	ClubMac	96
215	Direct Connections	121
15-17	La Cie	52
218	MegaHaus	245
40	MicroNet Technology, Inc.	139
94-95	Pinnacle Micro	115
223	Pro Direct	135
219	SuperMicro	126
INPUT DEVICES		
BC	Kensington Microware Ltd.	—
MISCELLANEOUS		
28	Momentum, Inc.	8
MODEMS		
187	Logicode Technology	297
NETWORKING		
146-147	Dayna Communications	161
30-31	IBM	179
POWERBOOK		
12	VST Power Systems	73
PRINTERS		
64	Fargo Electronics	172
8	GDT Softworks	32/42
93	Hewlett Packard	11
45	LaserMaster	102
151	LaserMaster	103
112-113	Scitex	233
192	Tektronix	143
180-181	Texas Instruments	266
29	Xante Corporation	112
74	Xante Corporation	111
VIDEO		
46	Connectix	19
SERVICES		
FINANCIAL		
155-156	Citibank	—
ACCESSORIES		
FURNITURE		
10	Anthro	—
14	MacTable/ScanCo	—
MISCELLANEOUS		
11	Apple Computer	—
14	MacTable/ScanCo	—
ON LINE		
171-172	America OnLine	—
101	CompuServe	6
32	Delphi	17
TRADESHOWS/CONFERENCES		
128-131	Macworld Expo SF	—
MAIL ORDER		
210-211	Alliance Peripheral Systems	6
220-221	BottomLine Distribution	6
222	BottomLine Distribution	6
206-207	ClubMac	9
83-85	Computer Discount Warehouse	
215	Direct Connections	12
213	Educational Resources	21
208-209	Express Direct	8
224-225	Mac Bargains	7
71-73	MacConnection	—
199-205	MacMall	13
216-217	MacWarehouse	15
218	MegaHaus	24
223	Pro Direct	13
254-256	Quality Computers	26
227	The Mac Zone	7

Macworld

JUST FOR YOU. FREE PRODUCT INFORMATION FROM MACWORLD.

There's no cost or obligation. We even pay the postage! Simply fill in the questionnaire, then circle the numbers on the card below for the products that interest you. Numbers for advertised products can be found in the ad and in both the Product Index and Ad Index. Fold card and mail. No staples please.

FASTFAX
For faster results just fax this sheet to +1-413-637-4343. Please indicate your fax number where indicated.

Please answer these questions so that we may better serve you.

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)

- 01 ❑ 1000+
- 02 ❑ 999 - 100
- 03 ❑ 99 - 25
- 04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)

- 05 ❑ Apple Workgroup Servers/ Mac Quadra-series
- 06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
- 07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
- 08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

	C	D
500+	❑ 09	❑ 15
499 - 100	❑ 10	❑ 16
99 - 50	❑ 11	❑ 17
49 - 10	❑ 12	❑ 18
9 - 1	❑ 13	❑ 19
None	❑ 14	❑ 20

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)

- 21 ❑ Initiate/Determine need for product/capabilities/features
- 22 ❑ Evaluate, recommend, or approve brands/models
- 23 ❑ Evaluate, recommend, or approve purchase source
- 24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)

- 25 ❑ $1 million or more
- 26 ❑ $999,999 – $500,000
- 27 ❑ $499,999 – $100,000
- 28 ❑ $99,999 – $50,000
- 29 ❑ $49,999 – $10,000
- 30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)

- 31 ❑ Business software (Word processing, spreadsheet, database, etc.)
- 32 ❑ Graphics/publishing software
- 33 ❑ Monitors/displays
- 34 ❑ Printers/scanners
- 35 ❑ Networking/communications hardware and/or software
- 36 ❑ Multimedia/AV hardware and/or software
- 37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)

- 38 ❑ Computer Reseller/VAR/VAD
- 39 ❑ MIS/DP/IS/Network Management
- 40 ❑ Engineering
- 41 ❑ R&D/Scientific
- 42 ❑ Corporate/General Management
- 43 ❑ Accounting/Finance
- 44 ❑ Marketing/Sales/PR/ Communications
- 45 ❑ Art/Design/Creative Services

Thank You!

Please print or type all information.

Title _____

Co. _____

Phone _____

Fax _____

Free Product Information

1	2	3	4	5	151	152	153	154	155
6	7	8	9	10	156	157	158	159	160
11	12	13	14	15	161	162	163	164	165
16	17	18	19	20	166	167	168	169	170
21	22	23	24	25	171	172	173	174	175
26	27	28	29	30	176	177	178	179	180
31	32	33	34	35	181	182	183	184	185
36	37	38	39	40	186	187	188	189	190
41	42	43	44	45	191	192	193	194	195
46	47	48	49	50	196	197	198	199	200
51	52	53	54	55	201	202	203	204	205
56	57	58	59	60	206	207	208	209	210
61	62	63	64	65	211	212	213	214	215
66	67	68	69	70	216	217	218	219	220
71	72	73	74	75	221	222	223	224	225
76	77	78	79	80	226	227	228	229	230
81	82	83	84	85	231	232	233	234	235
86	87	88	89	90	236	237	238	239	240
91	92	93	94	95	241	242	243	244	245
96	97	98	99	100	246	247	248	249	250
101	102	103	104	105	251	252	253	254	255
106	107	108	109	110	256	257	258	259	260
111	112	113	114	115	261	262	263	264	265
116	117	118	119	120	266	267	268	269	270
121	122	123	124	125	271	272	273	274	275
126	127	128	129	130	276	277	278	279	280
131	132	133	134	135	281	282	283	284	285
136	137	138	139	140	286	287	288	289	290
141	142	143	144	145	291	292	293	294	295
146	147	148	149	150	296	297	298	299	300

Free Macworld Shopper Information

401	402	403	404	405	501	502	503	504	505
406	407	408	409	410	506	507	508	509	510
411	412	413	414	415	511	512	513	514	515
416	417	418	419	420	516	517	518	519	520
421	422	423	424	425	521	522	523	524	525
426	427	428	429	430	526	527	528	529	530
431	432	433	434	435	531	532	533	534	535
436	437	438	439	440	536	537	538	539	540
441	442	443	444	445	541	542	543	544	545
446	447	448	449	450	546	547	548	549	550
451	452	453	454	455	551	552	553	554	555
456	457	458	459	460	556	557	558	559	560
461	462	463	464	465	561	562	563	564	565
466	467	468	469	470	566	567	568	569	570
471	472	473	474	475	571	572	573	574	575
476	477	478	479	480	576	577	578	579	580
481	482	483	484	485	581	582	583	584	585
486	487	488	489	490	586	587	588	589	590
491	492	493	494	495	591	592	593	594	595
496	497	498	499	500	596	597	598	599	600

❑ Check box and fill in the appropriate information to subscribe to Macworld. You will be billed $24.00 for a 1-year (12 issue) subscription (U.S. only).

Expires Jan 6, 1995 S1 November 1994

Please print or type all information.

Name _____

Address _____

City _____

State _____ Zip _____

FREE PRODUCT INFORMATION.

Get valuable information about the products that interest you. There's no cost; no obligation. Just fill out both sides of this FASTFACTS Information form. Circle the numbers for the desired products. Then mail the card. We pay the postage! For even faster results fill out and send the card via our FASTFAX.

Now fast... get the facts, the competition's gaining on you.

Macworld

FOLD HERE AND CLOSE WITH TAPE. DO NOT STAPLE!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

ter to WIN a NEW Apple® Macintosh Quadra® 605!
NO PURCHASE REQUIRED!

REATIVE COMPUTERS

MacMall™

YOUR MAC SUPERSTORE!™

Since 1985

THE LARGEST AUTHORIZED FULL LINE APPLE MACINTOSH® MAIL-ORDER SUPERSTORE!

Verified lowest prices with over 2500 products on sale!

Lower Than Warehouse Prices!!!

MacMall Hours

Pacific Standard Time
Monday-Friday 4am to 8pm
Sat/Sun. 7am to 6pm

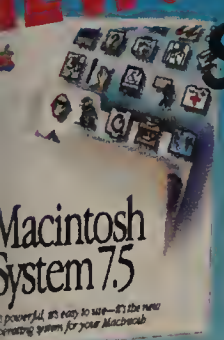
Eastern Standard Time
Monday-Friday 7am to 11pm
Sat/Sun. 10am to 9pm

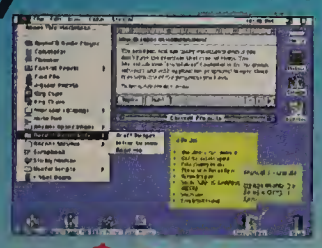
Your source for all Apple Macintosh® computers and peripherals!!

Authorized Catalog Reseller

CHECK OUT THE LATEST MACMALL CATALOG FOR THE LARGEST SELECTION OF APPLE PRODUCTS!
CALL FOR YOUR FREE COPY!

NEW! Macintosh System 7.5!





.5" disks 65948
D-ROM 65949

$98.99!

proved performance and efficiency with enhanced Apple desk cessories and tools. New menu-bar clock, Window Shade feature, tomatic power off, AppleCD Audio Player, and much more!
sily access recently used documents from the Apple menu
t step-by-step assistance with Apple Guide
ld new printing options with QuickDraw GX extensions (available parately). Create electronic documents that nay other System 7.5 er can read. Seven QuickDraw GX fonts included.
e Macintosh PC Exchange to work with Dos disks and files (version 0 included).
change electronic mail using PowerTalk software
e Quick Time software to integrate video, animation and high-ality still images, and sound into all types of documents.
ecial features for PowerBook users that optimizes battery life, chronize files with other computers, and change frequently used werBook settings from one convenient central strip.
quires: 6B020, 6B030, 6B040 or PowerPC microprocessor for QuickTime, werTalk and QuickDraw GX. Minimum 8MB RAM for full suite (16MB on werMac.) 4MB RAM permits installation of all features except PowerTalk and ickDraw GX (8MB on PowerMac). Hard disk space with 25MB available.

VividLink 14.4 Fax Modem

Includes full-featured communication software and cable!

$99! 65304

VividQuest

Read/Write 44MB

VividQuest 88MB drives provide you with unlimited storage of your data with the flexibility of a floppy disk. Once you fill up one disk, just pop in a new one and you're ready to go.

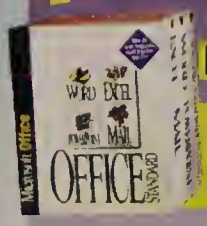
88MB SyQuest

$299!
EXTERNAL
65496

(SCSI cable and cartridge extra.)

NEW! Microsoft Office 4.2

NEW VERSION UPGRADE!



FREE BONUS!
CONNECTIX RAM DOUBLER 1.5

65781 **$237.99*!**

*After $40 mail-in rebate direct from Microsoft

NEW! FASTEST DELIVERY SERVICE GUARANTEE!

ORDER QUICKLY

"We will deliver your order by 10:30am THE NEXT DAY or pay for your shipping!"*

*Limited to in-stock orders placed before 8pm (EST) not requiring configuration and delivered by FedEx® to destinations within the contiguous U.S.. Next day delivery may not be available in certain rural areas. Limit 10lbs.

ernight FedEx®
very by 10:30am!
Per Order+

FedEx® Federal Express

+Up to 10lbs within the contiguous U.S. only. May not be available to certain rural areas.

1•800•222•2808

Fax 310-222-5800 • Customer Service 800-560-6800

To Order Call Toll Free

1•800•222•2808

Fax: 310-222-5800
Customer Service: 800-560-6800
Order Status: 800-560-6800
Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

FedEx Federal Express — **Overnight Delivery by 10:30am! $3 Per Order**

*Limited to in-stock orders placed before 8pm (EST) not requiring configuration and delivered by FedEx® to destinations within the contiguous U.S.. Next day delivery may not be available in certain rural areas. Limit 10lbs.

HP SCANJET IIcx Scanner

The high performance color/grayscale scanner that provides advanced features at a breakthrough price!

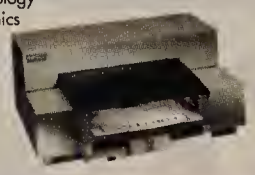
- Superior image quality with 1600 DPI enhanced resolution; 400 DPI optical resolution
- 24-bit color allows you to scan over 16 million colors
- HP AccuPage far better text recognition
- Optional transparency adapter available
- Optional 50-page document feeder available
- One-year HP Express Exchange Warranty far 24-hour replacement service

62885 **$949**

HP DESKWRITER 520 Printer

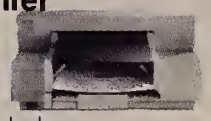
HP's most affordable high-quality printer

- Clear, sharp 600x300 dpi professional quality output – HP's exclusive Resolution Enhancement technology
- Grayscale printing for dramatic black graphics
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces



63820 **$289**

HP DESKWRITER 560C Printer



HP's affordable high-quality black and color printer far the Macintosh computer.

- Clear, sharp 600x300 dpi professional quality output HP's exclusive Resolution Enhancement technology
- Easy color printing with ColorSmart technology
- Prints up to 3 pages per minute in black, and an average of 4 minutes per page in color
- Resident black and color ink cartridges for convenient black and color printing without switching cartridges
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

3-YEAR LIMITED WARRANTY!

63821 **$579**

HP SCANJET IIp Scanner

Bonus: Includes FREE Caleo WordScan OCR Software

300dpi, Grayscale Flatbed Scanner

- 8 bit grey scale provides high quality reproduction
- New AccuPage technology features makes third-party OCR software even more accurate
- Print-path calibration optimizes settings for high-quality output
- Automatic exposure saves time and eliminates guesswork

60124 **$485**

HP DeskWriter 310 Printer

The new HP DeskWriter 310 printer for Apple Macintosh PowerBook® users.

- Crisp 300 dpi block print
- Optional color kit for color output
- Fast – up to 3 pages per minute
- Compact and lightweight
- 35 scalable fonts built-in
- Background printing
- Optional rechargeable battery

62564 **$309**

Desk Writer 310 w/ Sheet Feeder

65750 **$375**

Transparency Adapter for IIcx	$644.99	63585
Desk Writer 310 Battery	$36.99	60750
Desk Writer 310 Rapid Charger	$74.99	60751
Desk Writer 310 Carrying Case	$74.99	60752
DeskWriter 310 Sheet Feeder	$69.99	60749
Black Ink Cartridge for DeskWriter 310	$17.99	63511
Black Cartridge for Writer II, Jet IID Jet II	$84.99	51071
Black Cartridge for Writer Plus, LJ Jet Plus, LJ 500	$94.99	61449
Black Cartridge for Personal Laser Writer LS, NT, NTR	$74.99	1399
Black Cartridge for Laser Jet IIISI	$124.99	3638
Black Cartridge for 600/630 Laser Writer Pro, Laser	$108.99	60834
Black Cartridge for DeskWriter, DeskJet	$24.99	60123
Tri Color Cartridge DeskWriter/DeskJet	$27.99	3344
Color Printing Kit	$36.99	62565

HEWLETT® PACKARD *Authorized Dealer*

HP DeskJet 1200C/PS Printer

- 600x300 dpi block text with Resolution Enhancement Technology • 300 dpi full color printing • 2MB memory, expandable to 26MB • Postscript level 2• 6 pages per min, for block text; 1-2 min. for color

$2249.99 61618

Black Cartridge DeskJet 1200c	$25.99	62083
Cyan Cartridge DeskJet 1200c	$28.99	62084
Magenta Cartridge DeskJet 1200c	$28.99	62082
Yellow Cartridge DeskJet 1200c	$28.99	62081

HP LASERJET 4ML Printer

- HP Resolution Enhancement technology and microfine toner produce the best 300dpi output available
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA processor
- 4 MB RAM standard memory
- Macintosh and Windows PC compatible

4MB RAM

$1029 61793

HP LASERJET 4MP Printer

- True 600dpi resolution utilizing Resolution Enhancement technology and microfine toner
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA
- 6 MB RAM standard memory
- Macintosh and Windows PC compatible

6MB RAM

$1369 62758

DesignWorkshop™

A breakthrough in 3D modeling for designers.

DesignWorkshop™ presents a new paradigm for modeling on the Macintosh, with design-oriented 3D direct manipulation. By extending the familiar click-and-drag MacDraw style of interaction into true 3D, the unique interface provides a fluent environment for designing in 3D with a computer – for the first time. Fast shadow-casting gives you true-color object-based renderings, not just pixel images. The sun position is set directly by latitude, date and time. And the view-independent shadows permit multiple views of the shadowed model without recalculation. Time-lapse sun studies are easily calculated and automatically saved as QuickTime™ movies. DXF import and export for both models and drawings is built in, and hidden-line and pochéd section drawings are generated automatically.

Artifice, Inc.

Accelerated for Power Macintosh

90 Day Money Back Guarantee

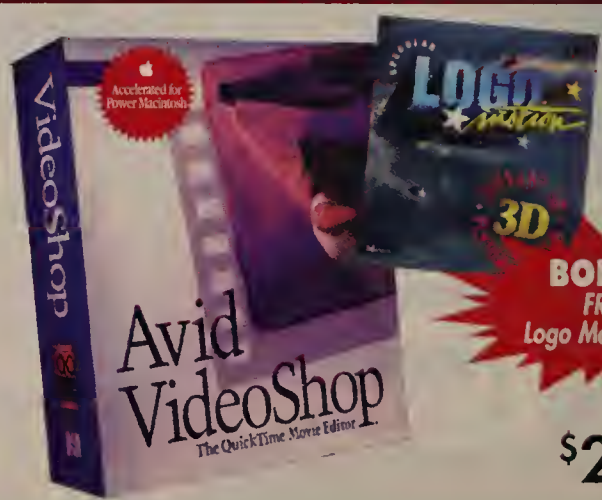
DesignWorkshop™ for 64k $439.99 65698

DesignWorkshop™ for PowerPC $439.99 65699

VideoShop® 3.0

The video software anyone can use. ™

VideoShop 3.0 makes it easier than ever for you to create high quality digital movies and videotapes that include stunning effects. To create a movie, simply drop media clips into the sequencer for powerful cut, copy, paste editing. Polish your movies with over 200 amazing digital effects, including Morph. Unique composing and layout features allow you to layer unlimited video and graphics tracks. With VideoShop, you can position, re-size and "fly" clips across a path. VideoShop also includes sound mixing and audio effects. Create anti-aliased titles with automatic scrolling. Avid is the industry leader that Hollywood professionals turn to. With over 300,000 copies already sold, why wait! PowerMac Accelerated. Includes royalty free footage. Requires: Color Mac, 4MB and 40MB drive, System 7.0 or greater



AVID

BONUS FREE Logo Motion 1.5

$259.99 65540

Radius IntelliColor Display/20e

The Intelligent 20" Color Display for Macintosh Computers

The next generation in professional two-page color display, the Radius IntelliColor Display/20e, delivers unrivaled command of your desktop, from "on-the-fly" resolution switching to state-of-the-art color temperature control. Compatible with most built-in video on Quadra, Centris and PowerMac models. Trinitron technology and adjustable color temperature means more accurate color. It also meets the Swedish MPRII ergonomic guidelines, with electromagnetic shielding and a banded antiglare panel. IntelliColor software provides control over a myriad of settings to give you the best possible picture for your Macintosh applications! Exclusive Worry Free Warranty.

$1878.99 65500

Radius PrecisionColor 17

New 17" color monitor with "on-the-fly" resolution switching from 640x480 to 1152x870. Digital controls for precise settings and super sharp .25mm dot pitch give you quality you can see! Compatible with built-in video of Quadra, Centris and PowerMac. Ask about the Radius worry-free service warranty!

*After $100 Radius Mail-in Rebate. Expires 9/30/94

$959.99* 63587

SUPERMAC

SuperMac Thunder/24 v.3.0

The latest release of the award winning Thunder /24 graphics card. With the leading QuickDraw acceleration the Thunder/24 v.3.0 processes layouts, illustrations, and other full-color graphics with lightning speed. Now up to 43 times faster.

$1599.99 55442

VideoVision Studio 2.0

The Professional Macintosh Digital Video System

radius AUTHORIZED RESELLER

With VideoVision Studio you can record full-screen, full motion, 60-field per second, digital video input and output to and from your hard disk. It digitizes stereo audio simultaneously and stores it with the video for easier editing.

$3689.99 New

WORRY FREE WARRANTY

Accelerated for Power Macintosh

Radius LeMans GT Display Adapter

The world's fastest 24-bit display interface for Macintosh, delivering resolutions to 1152x882 with ultra fast 32-bit QuickDraw acceleration. With 3MB of VRAM, and optimized ASICs, it performs up to 230% faster than built-in video of Quadra!

$1499.99 63788

Radius PrecisionColor Pro 24x Accelerator	$1079.99	61769
Radius PrecisionColor 24x (7")	$909.99	61695
Radius PrecisionColor Pro 24xk Adapter	$779.99	63786
SuperMac Thunder IIGX 1152	$2164.99	64387
SuperMac Spigot Power AV	$839.99	65666
SuperMatch 21 TXL	$2149.99	64712

RELISYS

AVEC 2400

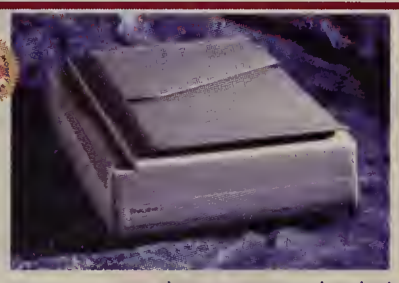
Color Scanner

The Avec Color 2400 Mac is a scanner which maximizes the desktop personal computer into a working imaging tool. It is a three pass design, capable of scanning a 8 1/2"x14" area in 24-bit, 16.8 million colors with a maximum resolution of 2400 dpi. This translates into 180,000 pixels per square inch, a true benefit for image scanning. Bundled with Adobe Photoshop LE and OmniPage Direct OCR software, the Avec 2400 has everything you need in an entry level color scanner with three times the specifications of the competition at a lower cost. SCSI-2 interface.

65711 **$588.99**

RELI 2412

Color Scanner



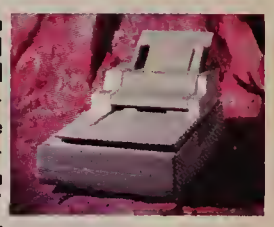
The Reli 2412 Mac is an excellent choice for the desktop publisher. It is of a single pass design, capable of scanning a 24-bit 8 1/2" x 14" 16.8 million color image with a maximum resolution of 2400 dpi. The Reli 2412's maximum optical resolution translates into 360,000 pixels per square inch, which benefits anyone scanning color images and transparencies. Bundled with Adobe Photoshop LE image processing and OmniPage Direct OCR software.

$789.99 65706

RELI 2412 Mac/T Color Scanner	$1189.99	65707
RELI 4816 Mac Color Scanner	$979.99	65708
RELI 4816 Mac/T Color Scanner	$1389.99	65709

RELI 9624

Professional Color Scanner with Transparency Option



The Reli 9624 is a scanning tool ideal for PrePress use and the graphics professional. It is of a single pass design, capable of scanning a 24-bit 8 1/2"x17" 16.8 million color image with a maximum of 9600 dpi. The Reli's 9624's maximum optical resolution translates into 1,440,000 pixels per square inch. Includes a transparency adapter for up to 4"x9" transparencies. Bundled with Adobe Photoshop image processing and OmniPage Direct OCR software.

$1949.99 65710

DigiTrax

Digital Audio Workstation Software

ALASKA AS SOFTWARE

DigiTrax is a digital audio workstation package for the AV Macintosh series (Centris 660AV, Quadra 660AV and Quadra 840AV) or a Mac II or greater with NuMedia card installed. The software features six tracks of 16-bit audio recording and playback at sampling rates of 22.05, 24, 44.1 or 48kHz. DigiTrax can import any 8 or 16 bit AIFF file or QuickTime™ movie. Audio editing is performed using a simple drag-and-drop interface in the time line window. Audio can be synchronized with QuickTime movie playback for sound authoring. DigiTrax provides professional features such as real-time digital parametric equalization. MIDI sequencer synchronization and SMPTE synchronization. The software features an intuitive interface based on traditional equipment (mixing console, tape deck transport control, etc.) Other features include nondestructive visual editing track slip and nondestructive automated punch in/out recording.

FREE Software Upgrade for PowerPC native version (when available)

$234.99 65548

Apple® External Hard Drives

- Front panel power-on switch
- Simple SCSI ID check or change under a front mounted pop-up panel.
- Complete set of cables, operating software and terminator
- Cushioned foot pads protect the drive and your desk in vertical or horizontal setups
- Advanced 3-1/2 drive technology provides fast data access

160MB External #66026	$249.99
230MB External #66027	$299.99
1000MB External #66028	$949.99

To Order Call Toll Free

OFFER CODE: D4A2MG14

1•800•222•2808

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

To Order Call Toll Free

1•800•222•2808

Fax: 310-222-5800
Customer Service: 800-560-6800
Order Status: 800-560-6800
Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

Lowest Prices? YEAH!
If you see a lower price advertised in this magazine, please call us and we'll do our very best to BEAT that advertised price.

Maxmedia TV

VGA TO TV CONVERTER

Now you can view computer graphics on large TV screens. Maxmedia TV allows both the monitor and TV to remain active, so that the presenter can use the monitor while the audience watching the TV. Simply connect it to your desktop or notebook PC, and instantly turn your TV into a monitor. Maxmedia TV is NTSC or PAL in one unit. Color, brightness and contrast are all adjustable from the Maxmedia TV case; no drivers required for standard 640x480 Mac displays. Cables provided for composite or S-video inputs. Mac to VGA adapter included to connect with Macintosh computers. Lightweight and portable for presentations on the road.

$189.99 66231

Video Expert
- Make any TV into a large screen presentation monitor
- Practical 4 line buffer
- RGB NTSC convert

$129.99 66232

VISTA-S6

UMAX™

4800 dpi, High Speed, Single Pass, Color Scanning Solution

- Magic Match color matching system
- Supports up to 8.5"x11" material
- SCSI 2 interface with cable included
- Scans black and white, color and line art
- Single pass with single cold lamp technology
- Includes Adobe Photoshop LE, OmniPage Direct
- Optical resolution of 600x300 dpi
- TWAIN compliant
- Micro-stepping optical transmission for faster speed
- De-screening, Auto-density adjustment, filtering function

$769.99 65829

You Can't Shock Us!

(Don't even try)

- **Pre-tested**
- **Pre-formatted**
- **100% SyQuest compatible**
- **ISO 9002 certified**
- **IBM shock resistant media**

5 Year Warranty

NOMAI™
Removable cartridges

The Nomai removable cartridges give the highest available data storage performance.

44MB $53.99 66229
88MB $63.99 66230

Manufactured and sold under license from SyQuest
All trademarks are the property of their respective companie

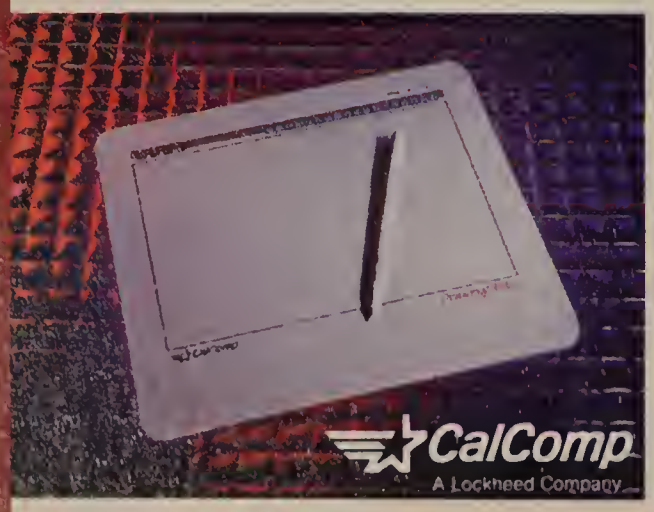
Internet Membership Kit

State-of-the-art, graphically driven software for accessing the Internet and its resources.

The Internet Membership Kit™ for Macintosh® includes everything you could possibly need or want in an Internet Kit.
- MacTCP, connection protocol software from Apple (a $60 value)
- Eudora for exchanging e-mail with millions of people and businesses connected to the Internet
- TurboGopher, Fetch and StuffIt Expander for finding, retrieving and decompressing Internet files.
- InterSLIP, a connection utility
- Complete step-by-step Mosaic documentation
- Ventana Press's bestselling Internet Tour Guide, by Michael Fraase, providing a lively discussion of Internet resources with documentation for important Internet tools
- The best selling Internet Yellow Pages, by Harley Hahn and Rick Stout, the 450-page Internet resource guide, including newsgroups, FTP sites and Gopher servers
- Two free electronic updates by Michael Fraase with news of important developments in the Information Infrastructure, new Internet resources and documentation and Internet vignettes
- Access to the Internet Visitors Center – FTP, Gopher and HTTP sites maintained by Michael Fraase, containing software upgrades, help information and more

$44.99 66233

VENTANA



Drawing Slate Graphics Tablet

DrawingSlate is the low cost, thin graphics tablet powerful enough for the most demanding graphic input applications - desktop publishing, graphic arts, multimedia - you name it! It's only about 1/8" thick, so you can use it on your lap or "file" it away when you're finished for the day. DrawingSlate uses cordless pens and cursors, including a "pressure pen" that translates each subtle hand movement into creative commands your software understands. These tablets are easy to use, affordable, and feature a lifetime limited warranty.

DrawingSlate 6x9
(Includes pressure sensitive pen) $204.99 65138

DrawingSlate 12x12
(Includes standard 4-button cursor) $239.99 65342

DrawingSlate 12x12
(Includes pressure sensitive pen) $239.99 65139

Pressure Sensitive Pen
CalComp's pressure sensitive pens, feature CalComp's Advanced Function Technology (AFT). These pens reproduce the feel of traditional artists' ink pens and include the dynamic sensing capabilities of tilt and height in addition to pressure.

$129.99 65140

MASTERSOFT

Word for Word 6.1

The award winning Ward far Ward allaws yau ta instantly convert ward pracessing, spreadsheet, database and campaund dacuments between Mac, DOS and Windows farmats. Over 15,000 canversian combinatians! Canverts mare than 3 pages per secand. Compaund dacument support canverts a text ta dacument with an embedded graphic ta anather campaund format, with the text and graphic fully intact. Retains farmatting and layaut, canverts character highlighting paragraphs, tabs, faatnates, columns, headers, faaters and mare!

$94.99 65041

DocuComp

DacuCamp II dacument comparisan and redlining saftware easily compares any twa versians af a dacument of files from different ward pracessars. Track inserted, deleted, replaced and maved text. A unique camparison windaw shaws yau the changes between the versians synchranausly. DocuComp can create a redlined dacument and a camparison summary and revisian list. Users can define haw they want there revisions to be displayed in the compasite dacument.

$108.99 65042

Claris Draw

Claris Draw makes it easy ta master any graphic task, offering all the advanced drawing taals yau need ta create compelling, professiana quality graphics. But that's just the beginning. You alsa get a wealth af presentatian capabilities. And flaating palettes give yau ane-click access ta dramatic effects like shadaws, embossing, calars, gradients and fill patterns.

Claris Draw alsa maximizes your productivity by affering seamless graphics campatibility with industry standard file farmats including MacDraw II and MacDraw Pra. And its underlying Claris Graphics Engine allows you ta transparently share files with the new Claris Impact™ software for Mocintash and Windaws. ClarisDraw - The versatile new drawing standard far fast and flexible Apple Macintosh graphics.

Version Upgrade $88.99 65631
Competitive Upgrade $98.99 65630

65628 $264.99

Claris Organizer

CLARIS

The Ultimate Personal Organizer

Claris Organizer takes the all-in-one approach ta persanal arganization. Claris Organizer uniquely combines powerful persanal organization features such as: appointments with week, day and manth views; autadialing and multiple fields for phone, e-mail and fax numbers; task lists that can be prioritized, sorted and checked off when completed; and nates that can be linked to appaintments, contacts, and to do items. Claris Organizer provides all these advanced features requiring only 850K disk space and 1 megabyte af RAM. **Claris Organizer** is a powerful personal organization tool that enables users to get arganized quickly and easily with intelligent features such as automatic linking, drag and drap functianality, smart find, autamatic completian, easy import/expart, and rabust printing. These intelligent features allow users to benefit from electronically stored infarmatian; saving time and increasing productivity.

Mac Home Journal

65629 $48.99

FileMaker Pro 2.1

The Perfect Solution for All Your Database Management Needs "Without Programming"

FileMaker Pra is quite probably the singular answer ta all yaur data management needs, FileMaker Pra gives you the power ta tackle even the most demanding business tasks with a seemingly endless variety af aptians that can be easily custamized ta fit yaur particular needs. FileMaker Pra can help yau build an extensive database ar simply print mailing labels with the same ease. Whether yau're warking an a network af Macs, PCs running Windaws, ar a cambinatian af bath, FileMaker Pra allaws you ta easily share infarmatian acrass platfarms.

SPECIAL HOLIDAY PRICING from Sept. 15th through Dec. 30th

$99 62272

MacWrite Pro 1.5

Now you can express yourself with mare than words, with MacWrite Pro. Add graphics, charts, and sound for an extra dimension to your wark. Over 125 new features including style sheets, WYSIWYG display for seeing haw your dacument will look without having to go to a preview screen, FAST spell checking and synanym locatar, easy table creatian and more! Standard pawer features naw include text wrap around objects and pictures, character spacing for professional looking typography, and an automatic backup/save feature. A great ward processor is naw even better!

New Pawer PC Versian $97.99 65870

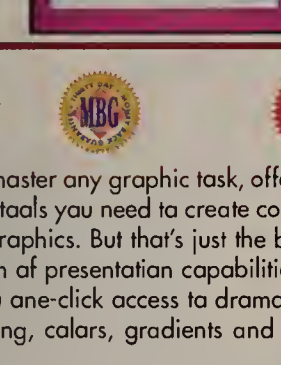
FileMaker Pro Server 2.2

Designed far demanding businesses af all sizes, FileMaker Pra Server is a high perfarmance data base engine that accelerates FileMaker Pra aperatians aver a netwark by aff-laading pracessar-intensive tasks - such as indexing - fram individual Macintash camputers ta yaur netwark server. Naw yau can have yaur FileMaker Pra database running faster and available ta mare netwark users with the pawer af FileMaker Pro Server. Requires a Macintash camputer (68020 ar greater; Pawer Macintash w/8MB memary ar Quadra AV w/ 4MB memary recammended)

$969.99 65828

Barron's Profiles of American Colleges Version 2.0 on CD-ROM

An indespensible college reference. Get details an admission requirements, costs, financial aid, campus safety and security, housing, facilities, tuition and housing costs and mare. Includes a full text search feature, graphical search by region, videos and college catalogs. This is the college disc ta awn.



NEW PRODUCT

$34.99 65815

LASER RESOURCES

SlimWriter by Fujitsu

with MacPack

Never before has there been a printer sa slim. The SlimWriter's 360dpi resalutian makes yaur presentatians an the raad as clear as thase in the affice.

- 1" Thick
- 2.6 paunds
- 360x360 dpi
- Includes A/C Adapter/Charger, MacPrint Drivers, Serial Cable, Ribban Cassette & Carrying Case

NEW PRODUCT

$309.99 66234

SlimWriter Battery
NiCd battery, battery life = 50 minutes (25-30 pages)
$44.99 66236

Multitime Ribbon Cassette
(One Black ink cassette, will last 250-300 pages)
$8.95 66235

BIGTOP PRODUCTIONS

Hello Kitty Big Fun Deluxe

NEW PRODUCT

Welcame ta the warld af HELLO KITTY! On her first CD-ROM, BIG FUN DELUXE, Hella Kitty has five Big Fun activities far girls and boys ages 3 ta 8: an Art game in which kids can calar, draw, create, and even print their awn masterpieces; Numbers games that teach caunting, adding and number recagnitian; a Calar & Shape game that teaches recagnitian while sharpening kid's memary skills, giving them an early start inta the warld af learning; plus a Starymaking game that pre-readers and early alike learn ward recognitian, while having fun writing and printing their awn staries!

$34.99 CD 66240

Keroppi DH
$34.99
3.5" disks 66241

To Order Call Toll Free
OFFER CODE: D4A2MG14
1•800•222•2808

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

To Order Call Toll Free

1•800•222•2808

Fax: 310-222-5800
Customer Service: 800-560-6800
Order Status: 800-560-6800
Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

MacMall has it all!
If you're looking for a Macintosh peripheral or accessory and don't see it then give us a CALL! We do our best to carry just about everything!

CSA'S FX-882™

Macintosh Coprocessor Accelerator

Low Cost Solution for Accelerating Graphics

The CSA FX-882 coprocessor accelerator will upgrade almost any Motorola 68881/68882 math coprocessor socket to a full 50 MHz! Great for increasing the speed of your 3D rendering, graphics, animation, morphing, image processing, scientific and engineering applications. 100% software compatibility.

50MHz COPROCESSOR UPGRADE

65695 $199.99

Blinky SCSI Device Monitor

Do You Know Where Your Data is Going? The Blinky SCSI device monitor tracks data going in and out of your internal and external devices. Takes the hassle out of knowing which device is being used. Ensures that data is being transferred between the devices you have selected. Great for Scanners, CD-ROMS and External Hard-Drives.

66239 $44.99

SPORTSTER V.34 28.8

U.S. Robotics — The Intelligent Choice in Data Communications

True V.34 IS HERE AND U.S. ROBOTICS HAS IT!

Connect to both V.34 and V.FC™ modems at 28,000 bps!

- 28,000 bps data, 14,400 bps fax
- Quicker remote control response, faster file transfer
- Hardware-based error control & data compression for great E-mail performance with any software
- Plug it in and be online in minutes
- FREE!! Over $300 in online services included: Prodigy®, CompuServe®, America Online®, ImagiNation®, Reuters Money Network, GEnie®, and FarSite®

28.8 bps

66245 $279.99

14,400 Mac&Fax External Modem

mac&fax SPORTSTER

Now you can transmit text, graphics and data right from your Macintosh with the Sportster. The Sportster Mac & Fax is built by U.S. Robotics, so you know it's easy to use, reliable and compatible. Everything you need is included in the box, and everything you need to know is in the manual. Just plug in Mac&Fax, and your Mac is a Fax. Includes Microphone LT software!

All U.S. Robotics Sportster Modems includes a 5 Year Warranty

61600 $159.99

POWER TRANSLATOR

Reach For A New Language With

from **Global Link**

There's a whole new world of new opportunities out there just waiting for you. Reach for these opportunities with the help of PowerTranslator, you can quickly and easily translate practically any document right from your PC or Macintosh computer. It's an indispensable tool for business that need to translate any document, or for students who want to learn a new language or refresh language skills.

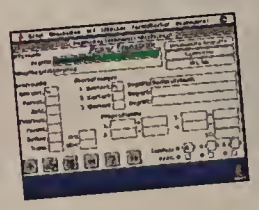
Power Translator can simplify your needs:

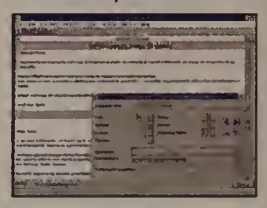
- Bi-directional translations. You have the flexibility to use Power Translator regardless of whether your original document is in English or in Spanish, French or German.
- Fast processing power.

Power Translator translates over 20,000 words per hour. A manual translation that can be used to take days can be completed in a matter of hours with Power Translator.

- User-modifiable dictionaries. Power Translator comes with a 250,000 plus dictionary of word forms and phrases which you can customize by changing and adding words that you use most frequently.
- Bi-lingual manuals and screens. A menu-driven format, combined with bi-lingual documentation, makes it easy for you to learn and use PowerTranslator.
- Easy, flexible text entry.

You can import entire text files from your word processor in ASCII format, or scan the text. Power Translator supports all popular OCR scanning programs and virtually all scanners.





Power Translator - Spanish $129.99 6624
Power Translator - German $129.99 6624
Power Translator - French $129.99 6624

Infini-D 2.6

Winner of the Mac User Eddy for Best 3D Package

Infini-D is a complete 3D animation package that combines broadcast quality output with an easy-to-use interface. Modeling features include 3D text, direct EPS import from Illustrator or Freehand, bevels, lathes and extrusions. Infini-D also has built-in editable surfaces like marble, wood, glass and metal. Any scanned image or QuickTime™ movie can also be used as a surface, or wrap a movie around an object! Additional animation effects include 3D object morphing and fog. Supports Power Macintosh. Requires 8MB RAM, FPU.

64238 $409.99

Specular Collage 2.0

The Composition Tool of Choice for Adobe Photoshop Professionals

Specular Collage 2.0 lets you manipulate and combine multiple hi-res files quickly and without a lot of RAM. Each image remains a separate object, even after it's been blended and layered with others. Choose from a rich selection of effects like automatic drop shadows, feathering and selected Photoshop plug-ins. This popular image composition tool is now Power PC native and supports CMYK and large images.

66127 $239.99

SONY Multiscan 15sf

Trinitron® Digital Control Color Monitor

- 15" Digital Multiscan® computer display with 14.0" maximum diagonal viewable area
- Trinitron® technology delivers bright images and vibrant colors
- .25mm Aperature Grille pitch
- EPA Energy Star and MPR II compliant
- Supports PC and Macintosh resolutions from VGA to 1280x1024 at 60Hz
- 3 year parts and labor and 2 year CRT warranty
- Adapter extra

$459 6515

*3.00 FEDEX® offer applies to continental U.S. only orders over 10lbs incur extra charges. Call customer service at 800-560-6800 or tech support at 800-760-0300 if you have a question or problem with any order. No packages will be accepted without a Return Authorization Number from Customer Service. All returned products must be in original condition with all packing and registration card, with in 30 days of original invoice date. Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc. While we do our best to check for mistakes, occasionally they do occur. Prices and specs subject to change without notice. No Apple products can be shipped outside the U.S.A. ©1994 MacMall

THE LARGEST AUTHORIZED FULL LINE APPLE® CATALOG RESELLER!

Authorized Catalog Reseller

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

EXCLUSIVE!!! Instant 5% REBATE on all Daystar products! DAYSTAR DIGITAL

VividVision™ 20" Color Monitor

•20 inch Invar CRT •Model 20/20

$1169.99 64906

E-MACHINES 16" Color Display

•16" Trinitron monitor • Model T16 II

$799.99 60484

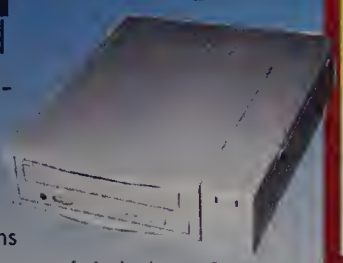
SAMSUNG 15" MultiSync Color Monitor

•15" Color Display • Model 4NE

$349.99 65556

VividSpin™ 3x

Triple Speed External CD-ROM Drive!



With 450 KB/sec transfer rate, 195ms access time, NEC CDR510 mechanism Plus Free FWB CD-ROMToolKit and SCSI cable included.

Refurbished NEC 3xi. Case may vary.

$299 66164

PRACTICAL PERIPHERALS

28.8 Data/Fax Modem $249.99 65063

14.4 Data/Fax Modem $129.99 65064

PhoneNet® Compatible Network Kit

VividNET

DIN-8 LocalTalk Connectors

$14.99 64709

Prometheus 14.4 ProModem

14.4 with voice. Includes Software, & Cables

$129.99 63173

VividSpin™ 2x

Double Speed External CD-ROM Drive

High Speed Access: 320m Sec (average)

High Speed Data Transfer Rate: 300KB/sec

64Kbytes buffer memory

SCSI cable extra, Case may vary.

FWB CD-ROM ToolKit

64925 $189

GLOBAL VILLAGE COMMUNICATION

PowerPort Mercury

19.2k bps data 14.4k bps fax $334.99

PB 100 Series 63062

PB 500 Series 64849

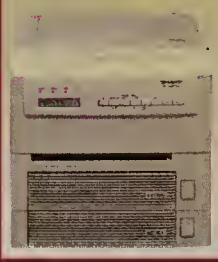
Duo Series 63895

MICROTEK Scan Maker IIHR

•2400dpi •8.5"x13.5" maximum •Includes Adobe Photoshop

$1088.99 64512

SHARP JX9660PS 600 dpi PostScript® Laser Printer



•Prints at a fast 8 ppm •DOS/MAC •2 Trays

$999 65757

Send me a one year catalog subscription and enter me in the Quadra 605 giveaway.

Hurry! You could be the winner!

Limit one entry per household. Drawing hold Oct. 30th. Employees of Creative Computers not eligible.

Name _____

Address _____

City _____

State _____

Zip _____

Mail to:

MACMALL

Advertising Department

2645 Maricopa Street

Tarrance, CA 90503-5144

24-bit Color 600 dpi one-pass flatbed scanner $479.99

SHARP 64245 JX325A

Microsoft Excel 5.0 Upgrade 65782

Accelerated for PowerMac

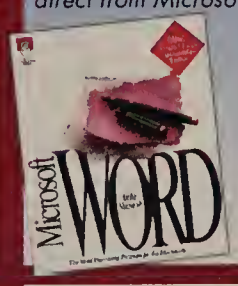
$94.99*

*Price is after $30 mail-in rebate direct from Microsoft

Accelerated for Power Macintosh

Microsoft EXCEL

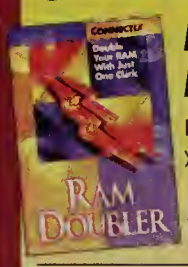
Word 6.0 Upgrade



$94.99* 65783

CONNECTIX RAM Doubler 1.5

Accelerated for PowerMac



Double the RAM in your Macintosh

Accelerated for Power Macintosh

$49.99 65785

Claris Works 2.1

w/purchase of CPU

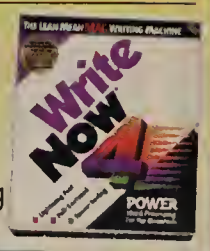
$69.99 64270

CLARIS Intergrate

WriteNow Version 4.0

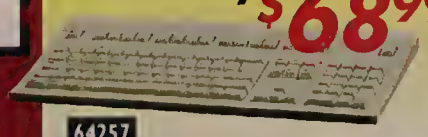
w/purchase of CPU

Word Processing



$24.99 65963

Extended Mac Keyboard VividKey™ $68.99



64257

NEW! FASTEST DELIVERY SERVICE GUARANTEE!

"We will deliver your order by 10:30am THE NEXT DAY or pay for your shipping!"*

*Limited to in-stock orders placed before 8pm (EST) not requiring configuration and delivered to destinations within the contiguous U.S. by FedEx® Next day not available to certain rural areas. Limit 10 lbs

FedEx Federal Express

Accelerated for Power Macintosh

MacMall has all the latest PowerMac native software!!

1•800•222•2808

Fax 310-222-5800 • Customer Service 800-560-6800

Circle 131 on reader service card

1-800-CLUBMAC 1-800-258-2622 1-800-258-2622

Hard Drives

Quantum

ClubMac 30 DAY MONEY BACK GUARANTEE

Quantum's hard disk drives are available in 2.5 and 3.5-inch form factors in storage capacities ranging from 170 megabytes to 2.1 gigabytes.

LPS 270MB INTERNAL

- Fast SCSI-2
- 4,500 RPM
- 10ms access time
- WriteCache & DisCache Firmware

ClubMac 30 DAY MONEY BACK GUARANTEE

Includes all necessary brackets and software

GO•DRIVE SERIES
2.5" POWERBOOK DRIVES

Capacity	Access	Internal	External
170mb	17ms	$259	$379
256mb	17ms	$339	$459

LPS SERIES
3.5" LOW PROFILE

170mb	14ms	$179	$239
270mb	11ms	$199	$259
340mb	11ms	$239	$299
540mb	10ms	$299	$359

EMPIRE SERIES
3.5" HIGH PERFORMANCE

1080mb	9.5ms	$699	$759
1400mb	9.5ms	$839	$899
2100mb	9.5ms	$1169	$1229

Quantum Pro and Empire series carry a TWO Year Warranty
Go-Drives carry a ONE Year Warranty

Seagate

ClubMac 30 DAY MONEY BACK GUARANTEE

Seagate drives include a 30-day Money Back Guarantee and a FIVE Year Warranty. Seagate drives are preformatted and thoroughly tested. The latest stable Apple system software preloaded. Also SCSI Director Formatting Utility software, brackets and cables for internal configurations, and users manual are included.

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" HALF HEIGHT						
2.1GB	ST12400N	*Hawk 2*	9ms	2000mb	$1279	$1339
4.3GB	ST15230N	*Hawk 4*	9ms	4000mb	$2139	$2199
1.7GB	ST11950N	*Barracuda 1*	8ms	1350mb	$1379	$1439
2.1GB	ST12550N	*Barracuda 2*	8ms	2050mb	$1389	$1449
4.3GB	ST115150N	*Barracuda 4*	8.5ms	4000mb	$2479	$2539
5.25" FULL HEIGHT						
2.9GB	ST43400N	*Elite-3*	11ms	2750mb	$2089	$2189
9.1GB	ST410800N	*Elite-9*	11ms	8600mb	$3739	$3839

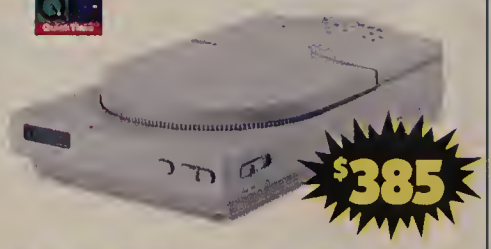
Seagate drives carry a ONE Year Warranty

CD-ROMs

NEC

NEC MultiSpin 3Xp

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.



MultiSpin CD-ROM Reader · MPC2 Multimedia PC · PhotoCD

MultiSpin 3Xp CD-ROM Reader

CD-ROM READERS

	w/a bundle	w/ClubMac CD bundle
MultiSpin 3Xp (Portable, 250ms access time, very light; 2.4 lbs)	$385	$485
MultiSpin 3Xi (Internal, 195ms access time, 450KB/sec data transfer)	$429	$529
MultiSpin 3Xe (External, 195ms access time, 450KB/sec data transfer)	$469	$569
MultiSpin 4X Pro (External, 180ms access time, 600KB/sec data transfer)	$699	$799

NEC MultiSpin CD-ROM Readers carry a TWO Year Warranty

ClubMac Removable Drives

FEATURING SyQuest REMOVABLE TECHNOLOGY

ClubMac 30 DAY MONEY BACK GUARANTEE

CLUBMAC REMOVABLES

CLUBMAC 3.5" REMOVABLES

	Internal	External
ClubMac 44mb 5.25" (SQ555)	$199	$229
ClubMac 88c 5.25" (SQ5110C)	$328	$368
ClubMac 200mb 5.25" (SQ5200)	$448	$488
ClubMac 105mb 3.5" (SQ3105)	$259	$299
ClubMac 270mb 3.5" (SQ3270)	$459	$499

CARTRIDGES

CLUBMAC 5.25" REMOVABLES

44mb (SQ400)	$57
88mb (SQ800)	$69
200mb (SQ2000)	$79
105mb (SQ310)	$57
270mb (SQ327)	$65

All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plug-and-play" and documentation.
All SyQuest drives include a TWO Year Warranty. All SyQuest cartridges include a FIVE Year Warranty.

ClubMac Optical Drives

INTRODUCING THE NEW CLUBMAC 230MB OLYMPUS OPTICAL DRIVE

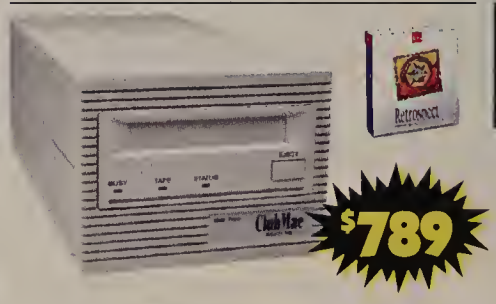
- 28ms Average Seek Time
- MTBF: 50,000 hours
- SCSI-2 Interface
- Includes a FREE formatted optical disk
- TWO Year Warranty

ClubMac 30 DAY MONEY BACK GUARANTEE

	Access Time	Internal	External
ClubMac (MOS-320E) 3.5" 230MB Olympus Optical NEW	28ms	$865	$895
Fujitsu (M2512A-DYNAMO) 3.5" 230MB Dynamo	30ms		$929
ClubMac (JY-750) 5.25" 650MB Sharp Optical MW	40ms	$1669	$1699
ClubMac (JY-800) 5.25" 1.3GB Sharp Optical	40ms	$2069	$2099
MaxOptix Tahiti III (9400) 5.25" 1.3GB Optical	19ms		$2499
Hewlett-Packard (C1716T) 5.25" 1.3GB Optical External	28ms		$2399

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

ClubMac Tape Backups



ClubMac 2.0GB DDS DAT Drive

- 20 second average data access time (based on 60m tape)
- Up to 266 KB/sec data transfer rate
- SCSI-1/SCSI-2 Interface • MTBF of 60,000 hours

ClubMac 30 DAY MONEY BACK GUARANTEE

Capacity	Model	Format	Media	Internal	External
2.0GB	ClubMac DAT	DDS	60m, 90m	$739	$789
2-4GB	ClubMac DAT/DC	DDS-DC	60m, 90m	$929	$979
4-8GB	ClubMac DAT/2	DDS-2	60m, 90m, 120m	$1139	$1189
2-4GB	EXB-8205S	8mm	112m	$1499	$1549
5-10GB	EXB-8505S	8mm	112m	$2315	$2365

ClubMac DAT and DAT/DC drives include Retrospect v2.1 Backup Software, ONE 90 Meter Tape and a TWO Year Warranty. Exabyte Tape Backup drives carry a ONE Year Warranty. The ClubMac DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Meter Tape and a ONE Year Warranty

CD-ROMS

PhotoCD

ClubMac 2X Speed CD-ROM Reader

- 320ms access time • Caddy-Less design
- Double Speed performance
- Headphone jack and RCA jacks
- PhotoCD compliant

ClubMac 30 DAY MONEY BACK GUARANTEE

	w/a bundle	w/ClubMac CD bundle
ClubMac Dual-Speed (External, 320ms access time)	$199	$299
ClubMac Quad-Speed (External, 150ms access time) NEW	$599	$699

The ClubMac CD-ROM readers carry a ONE Year Warranty

ClubMac CD Bundle

$800 VALUE

The Animals · Atlas Pack (World) · Atlas Pack (US) · Mayo Clinic · Toolworks Encyclopedia v6.0 · Space Shuttle · Quickshot Speakers

radius

Monitors, Graphic Cards & MultiMedia

SUPERMAC™

E-Machines T16 II

The T16 II delivers 70% more display area, providing you with the elbow room for full-page layouts or working with several applications in multiple windows at the same time. Its multiple resolutions range from 640 x 480 to 1024 x 768. Automatically syncs to most popular Macintosh timings; plus it works with on-board graphics on the Quadra and Centris.

While supplies last!!

MONITORS

- recisionColor Display/21 (0463) $1969
- telliColor Display/20e (0461) $1875
- recisionColor Display/20v (0427) $1379
- recisionColor Display/17 (0460) ..... $959 *
- vot Display (0361) $549
- ll Page Display/gs (0424) $479
- PD20gs (0436)/21gs (0437) ..... $785/$969
- perMatch 21•T XL Trinitron (STD2102) $2099
- perMatch 20•T XL Trinitron (STD9752-XL) $1949
- perMatch 17XL (STD1701) $869
- atinum 21 Two-Page GS (STD9761) $999
- essView 21 •T (PV2101) $3199
- Machines T16 II (PV2101) $799

After MFR $100.00 rebate. Offer expires 09/30/94

VideoVision Studio

With JPEG hardware compression and decompression for full-screen, full-motion recording and playback from a hard disk, VideoVision Studio combines the power and flexibility of the Macintosh with the ease and transportability of video tape.

DigitalFilm Deluxe

Real-time capture of 60 fields/sec, full-motion video and audio to disk, supports 30 frames/sec with video capture up to 640 x 240, hardware JPEG compression, includes MacroMedia Director.

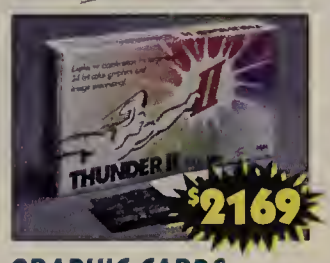
Incredible price!

MULTIMEDIA SOLUTIONS

- VideoVision Studio Pro Pak (0418) $8299
- VideoVision Studio (0418) $3295
- VideoVision Studio Upgrade (0419) $1499
- VideoVision Studio Basic (0416) $1509
- DigitalFilm Deluxe (DV2050) $1699
- Spigot II Tape (DV1530) $835
- Video Spigot NuBus (DV1030) $359
- Video Spigot NuBus LC (DV1050) $235

LeMansGT

Delivering 24-bit color at resolutions up to 1152 x 870, Radius' high-octane LeMansGT delivers the best on-screen performance of any interface in its class. The LeMansGT features a 7" board, instantaneous resolution switching, on-board acceleration, razor-sharp photorealistic color, and Adobe Photoshop Acceleration.



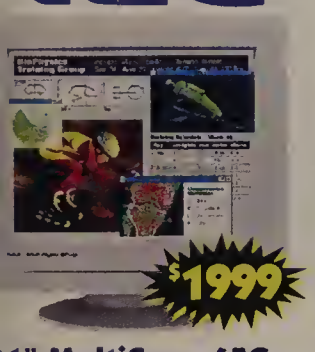
Thunder II GX• 1152

Thunder II GX•1152's 1152 x 870 resolution is great for viewing a full two-page spread without scrolling. A cost-effective solution with all the power of CMYK acceleration, image-processing acceleration, image-processing acceleration, and QuickDraw acceleration. It is also Power Macintosh compatible.

GRAPHIC CARDS

- LeMansGT (0447) $1835
- PrecisionColor Pro 24X (0429) $1319
- PrecisionColor Pro 24XK (0430) $749
- PrecisionColor Pro 24XP (0431) $439
- PrecisionColor 24X (0421) $929
- PrecisionColor 8XJ (0369) $439
- Thunder II GX•1600 1600 x 1200 CMYK acceleration $3199
- Thunder II GX•1360 1360 x 1024 CMYK acceleration $2579
- Thunder II GX•1152 1152 x 870 CMYK acceleration $2169
- Thunder/24 v3.0 (G1130) $1399
- Spectrum Power • 1152 (G3430) $1169
- Spectrum/24 Series V (G3930) $829

NEC



21" MultiSync 6FGp

MONITORS

- 14" MultiSync 2V (JC-1432VMA) up to 832 x 624 ..... $310 †
- 15" MultiSync 3V (JC-1535VMA) up to 1024 x 768 ..... $429 **
- 15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768 ..... $629
- 17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768 ..... $989
- 17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024 ..... $1099
- 21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024 ..... $1999

NEC Monitors carry a THREE Year Warranty.
†After MFR $25.00 rebate. ** After MFR $40.00 rebate. Offers end 09/30/94

PRINTERS

- Silentwriter 640 6ppm, 300 dpi, 52 fonts, PS Level 2 ..... $679 *
- Silentwriter 1097 10ppm, 600 dpi, 35 fonts PS Level 2 ..... $1379

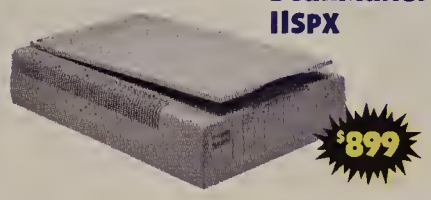
The Silentwriter 640 carries a Limited TWO-Year Overnight Replacement Warranty
The Silentwriter 1097 carries a ONE Year Warranty.
*After MFR $50.00 rebate. Offer ends 09/30/94

Scanners

MICROTEK

Better Images Through Innovation.

ScanMaker IISPX



- ScanMaker IIG with Fractal Design Sketcher 1.0 ..... $399
- ScanMaker IISP with Photoshop LE $769
- ScanMaker IISPX with full version of Photoshop $899
- ScanMaker IIHR with full version of Photoshop $1079

EPSON

ES-1200C Pro Mac

NEW

- Optical resolution: 600 x 1200 dpi
- Maximum scanning resolution: 4800 x 4800 dpi
- 30-bit internal, 24-bit external
- Scans over 1 Billion colors!

- ES-1200C Pro-MAC $1299
  Up to 4800dpi, Full version of PhotoShop, ScanTastic, Kai's PowerTools
- ES-800C LE $899
  Up to 1600dpi, PhotoShop LE, ScanTastic
- ActionScanning-Mac ..... $699 *
  Up to 1200dpi, PhotoShop LE & ScanTastic
- Transparency Unit (BB13021) $749

*After MFR $100 rebate, offer ends 12/31/94

Printers

HP LaserJet 4MP Printer

True 600 x 600 dpi
PostScript Level 2
with 35 scalable fonts
6 MB RAM, expandable to 22MB

HEWLETT PACKARD
Authorized Reseller

HP DeskWriter Inkjet Printers carry a THREE Year Warranty.
HP DeskWriter 310 Printers carry a ONE Year Warranty.
HP LaserJet Printers carry a ONE Year Warranty.

- HP DeskWriter 310 Printer 300 x 300 dpi, 3ppm, Optional Color Kit Available .. $309
- HP DeskWriter 310 Printer with Cutsheet Feeder (60-sheet), Color Kit Available .. $369
- HP DeskWriter 520 Inkjet Printer 600 x 300 dpi, 3ppm, 35 fonts $289
- HP DeskWriter 560C Inkjet Printer 600 x 300 dpi color, 3ppm, 35 fonts .. $575
- HP DeskJet 1200C/PS PostScript Printer 600 x 300 dpi, 6ppm $2215
- HP LaserJet 4ML Printer 300 x 300 dpi, 4ppm, 35 scalable fonts $1029
- HP LaserJet 4MP Printer 600 x 600 dpi, 4ppm, 35 scalable fonts $1395

Modems

Supra Corporation

SupraFAXModem 28.8 MC

SUPRA MODEMS

- SupraFAXModem 14.4 LC V.32bis, V.42bis, FAXcilitate .. $139
- SupraFAXModem 14.4 MC V.32bis, V.42bis, FAXcilitate $199
- SupraFAXModem 14.4 PB V.32bis, V.42, FAXcilitate .. $219
- SupraFAXModem 28.8 MC V.Fast Class w/FAXcilitate . $279
- SupraFAXModem 28.8 PB V.Fast Class, FAXcilitate ... $319

GLOBAL VILLAGE COMMUNICATION

DUO & PB500 Series Mercury now in stock!

TelePort Mercury

GLOBAL VILLAGE MODEMS

PowerPort / TelePort

- Mercury 19,200, V.32 Turbo ..... $319/$279
- Gold 14,400 V.32bis ..... $239/$225
- Bronze/Bronze II 2400, 4800, 9600 Fax ..... $89/$89
- OneWorld Fax Server 1 Line/AppleTalk $839
- OneWorld Fax Server 2 Line/10BT $1259

Acceleration

DAYSTAR DIGITAL

TURBO 040 ACCELERATORS

Turbo 040 (with FPU support)

- 33 MHz Turbo 040 w/12BK cache (000773) ... $789
- 40 MHz Turbo 040 w/12BK cache (000797) $955

Turbo 040i (w/o FPU support)

- 33 MHz Turbo 040i w/12BK cache (000780) .. $625
- FastCache Turbo (000223) $165

APPLICATION ACCELERATORS

- Image 040 (Quadra/Centris) (000414) $1539
- Quad 040 w/12BK cache (Quadra/Centris) (000056) ... $955

POWERPC PRODUCTS

- 66 MHz PowerPro 601 (000728) $1315
- 80 MHz PowerPro 601 (000735) $1997
- FastCache PowerPro-1MB Cache (000742) $499
- 66 MHz w/1MB Cache Bundle (000858) $1689
- 80 MHz w/1MB Cache Bundle (000865) $2425

POWERCACHE

without FPU / with FPU

- 33 MHz PowerCache (P31UV-033) . $275 / $357
- 50 MHz PowerCache (P31UV-050) . $415 / $537
- PowerCache Adapter* $99

* Not req'd for IIci, IIvi, IIvx, Performa 600

Networking

ASANTÉ

- 10THUB/12 10BT Hub w/12 10T, Thk & Thn ports .. $465
- 10THUB/8 10BT Hub w/8 10T, Thn port $229
- Mini EN/SC Thn/10BT SCSI Ether w/DT& PB cable . $297
- Mini EN/SC10T 10T SCSI Ethernet w/DT & PB cable $237
- ETEXT-FN AAUI Hub w/4 RJ45 ports $179
- FNTNA 10BT or Thin FriendlyNet Media Adapter $65
- MGNB-TN Mac II & Perf 600, Thk/Thn, 64K $115
- MGNB10T Mac II & Perf 600, Thk, 10BT, 64K $109
- MGNB-TK/TN/10 Mac II & Perf 600, Thk/Thn/10BT . $165
- AP1001 AsantéPrint, Thk/10BT or Thk/Thn $329

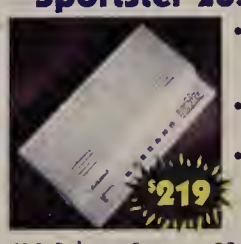
Modems

U.S. Robotics

The Intelligent Choice in Data Communications

NEW PRICE!

Sportster 28.8 Mac&Fax



- Support V.FC at 28.8 bps, v.32bis at 1.4 bps and all earlier ITU-T standards.
- Sends and receives Group III faxes at 14.4 bps.
- Automatic receive and query, background send and receive, fax forward and more.

U.S. Robotics Sportster 28.8 Mac&Fax $219

Input Devices

WACOM

UD Graphic Tablet

WACOM PRODUCTS

- ARTZ 6x8 ADB Tablet $299
- UD 12x12 Standard Tablet $499
- UD 12x18 Electrostatic Tablet $809
- UD 12x18 Standard Tablet $699
- UD 18x25 Standard Tablet $1999

CALL FOR FREE CATALOG

Warranties: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. Money Back Guarantee: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. Returns: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. All product information and prices are subject to change without notice. Not responsible for typographical errors.

VISA

No Surcharge!

63

Authorized Catalog Reseller

ClubMac

1-800-258-2622

Info (714)768-8130 • Tech Support (714)768-1490
Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

Macworld November 1994

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

Circle 96 on reader service card

We're not like the other

We go the extra

Macintosh™ Systems

Whether you need a system for high-end color publishing, professional pre-press applications, desktop design and production or simply business productivity – Express Direct can custom configure a Mac System that's right for your specific job and right for your budget.

And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System – so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

$4999

Power Macintosh 8100/80 AV with CD ROM Drive
16MB RAM, 500 MB HD, includes Ethernet & FPU.
• Add SuperMac 21TX•L display, Thunder /24 with DSP 24-bit graphics accelerator, Extended Keyboard & System 7.1.
Complete System Price $8849

Power Macintosh™

PowerPC™ Talk to an expert.

$869

*The Umax **UC1260 Mac** offers incredibly accurate 1200 dpi scanning with enhanced resolution up to 9600 dpi. Shown with optional transparency adapter. See below for bundles.*

UMAX®

UC 630	600 to 1200 dpi, 24-bit color	$509
UC 840	800 to 1600 dpi, 24-bit color	$659
NEW Vista S6	600 to 4800 dpi, 24-bit color	$679
UC 1260	1200 to 9600 dpi, 24-bit color	$869
PowerLook Pro	1200 to 9600 dpi, 30-bit color	$2969

Pick Your Own Software Bundle
Available only with scanner purchase.

Pro Bundle Full Photoshop, Kai's Power Tools & MagicMatch	$229
LE Bundle Photoshop LE, OmniPage Direct OCR & MagicMatch	$109

$3399

*Recommended for digital video on the 840AV, the FWB 2.0 GB **SledgeHammer 2000 FMF Wide Disk Array** and **SCSI JackHammer** optimize digital video recording and playback.*

FWB incorporated

SCSI JackHammer	$629
1 GB Hammer RAID NuBus Upgrade Upgrade your existing Apple or Apple or FWB drive to a 2 GB Hammer disk array. MacUser Editor's Choice Finalist.	$1669
17.5 GB SledgeHammer 17400FMF NuBus	$11,769
3.5 GB SledgeHammer 3500FMF Wide Sustained transfer rate of 11.6 MB/sec. Includes JackHammer SCSI-2 NuBus card, RAID ToolKit software, cables, active termination.	$6999
4 GB SledgeHammer 4100FMF Wide	$5899

$5899

GCC TECHNOLOGIES

*In-house, plain paper typesetter! The **SelectPress 1200** prints full bleed spreads and tabloid size pages at camera-ready 1200 dpi on 12"x19" paper. With Ethernet and 160 MB internal hard drive*

SelectPress 600 11"x17" plain paper at 600 dpi. PostScript Level 2.	$3749
SelectPress 600 Pro 11"x17" plain paper at 600 dpi with 16MB RAM, 160 MB HD.	$4799
Elite 8 300 dpi, edge-to-edge at 8 ppm	$699
NEW Elite 600 600 dpi, 4 MB RAM, 10 ppm, available Ethernet	$1399
WideWriter 360 prints up to 17"x22", QuickDraw at 360 dpi, free ATM.	$1469

We stock a complete line of quality products from all of the above manufacturers & more.

1-800-765-0020

Express Hours (CST) M-F 8am-7pm, Sat 10am-2pm • 24hr Fax • Customer Service Hotline: **1-800-236-3059**

Get it Direct!

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. A 2% surcharge applies to American Express purchases. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, cannot be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by Express Direct will be honored by Express Direct or its authorized agents only. All other manufacturers' warranties still apply. * Extended Service Plans are optional and available for an additional cost. Call for complete details.

mail order companies.

mile for you.

We'll give it to you straight.

When it comes to product knowledge and understanding the needs of graphic professionals – **nobody even comes close to Express Direct**. Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us - **you'll talk with an expert**. Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price – directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. **You're going to love working with us!**

b **$2099**

a **$1549**

*(a) SuperMac **Thunder /24 with free DSP**, "the fastest 24-bit card" & (b) the award winning **21•TXL**, 21" Trinitron display.*

a **$1089**

b **$499**

*(a) Radius **Precision Color Display 17** with (b) **Precision Color Pro 24xp** accelerated interface deliver razor sharp detail, blazing speed and unsurpassed value.*

SUPERMAC™

Spectrum Power 1152 Accelerated 24-bit up to 1152x870, 31 times faster than on-board	$1229
Thunder /24 with Free DSP Accelerated 24-bit up to 1152x870 with Photoshop DSP	$1549
SuperMatch 21 • TXL Energy Star compliant, WYSIWYG 1152x870, up to 1600x1200	$2099
Thunder II GX • 1600 CMYK accelerated up to 1600x1200	$3299
Thunder II GX • 1360 CMYK accelerated up to 1360x1024	$2749

radius

NEW Video Vision Studio 2.0	Call
Precision Color Display /17 Resolution up to 1152x870, switch-on-the-fly, Energy Star compliant	$1089
Le Mans GT Fastest card available, 24-bit up to 1152x870, fits in 7" NuBus	$1999
Precision Color Pro 24X Accelerated 24-bit up to 1152x870, fits in 7" NuBus	$1399
Precision Color Pro 24XP Accelerated 24-bit up to 832x624, fits in 7" NuBus	$499
NEW Color Pivot Portrait /15	$799

800

• Unlimited toll-free technical support

FULL WARRANTY COVERAGE

• Full warranty coverage

AUTHORIZED

• Authorized service & sales

• Flexible payment & leasing terms for those who qualify

International Orders Shipped Daily

Fax: 312.549.6447 Ph.: 312.549.0030

express direct

1801 W. Larchmont Ave.
Chicago, IL 60613

Call to receive a FREE catalog!

Circle 81 on reader service card

Best Technical Support

1994 Consultants Choice Awards · Macintosh Consultants Network

Great Products. Priceless Support!

Get the best in 1GB Drives: APS MS 4110

...AND THE AWARD GOES TO

APS MS 4110

$649*

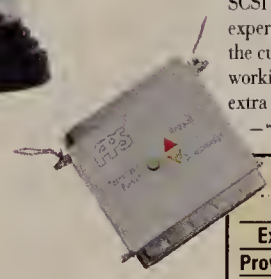
For Performance and value, The APS MS 4110 is the best deal going.

A stellar performer, the APS MS 4110 is the perfect internal match for the Mac that requires a low profile drive, sustained transfer rates as high as 3.5MB per second and seek times as low as 8.5ms. And yes this drive also includes an incredible 5 year manufacturer's warranty.

SCSI Sentry™

MW★★★★ When all was said and done, SCSI Sentry did its stuff. All the problems I have experienced became history...and this device may well be the cure for your SCSI Woes. Even if your SCSI setup is working OK, I heartily recommend SCSI Sentry as an extra ounce of protection.

— "MacWorld SEPT 94"



Just **$99**

Benefits	SCSI Sentry
Optimizes Overall SCSI Performance	✓
Exclusive Digital Active Termination	✓
Provides Ideal Termination Power	✓
Drastically Reduces SCSI Retries	✓
Regulates SCSI Line Voltage	✓
Solves Bus Impedance Issues	✓
LED Activity Indicators Diagnostic Tool	✓
Easy Installation: Takes Seconds	✓

APS

Macworld 1994 World-Class Awards:
★ Best Customer Service
★ Storage
★ Alternative Storage

Macworld 1993 World-Class Award:
★ APS Hard Drive Series

Consultants Choice Award 1994:
★ Best Technical Support

MacUser Editor's Choice Award 1993:
★ Best New Storage Product

Only need a half Gig?

Get the APS *I*^mr^540 internal for only $299!

The APS *I* 540 delivers seek times as low as 12ms and transfer rates as high as 2.3MB per second. As an extra bonus its Magneto Resistive Head technology allows data to be more densely packed on the drive platter.

APS *I*^mr^540
$399*

APS HARD DRIVES

For your Mac or Power Mac

Model	Capacity	Internal	SR2000
163MB - 1003MB			
APS Q 270[2] Maxtor 7290 mechanism	276MB	$199	$299
APS *I*^mr^360[2] IBM DSAS 3360 mechanism	342MB	299	399
APS *I*^mr^540[2] IBM DSAS 3540 mechanism	522MB	289	399
Mac User LABS ★★★★ APS Q 540[2] Quantum 540 mechanism	516MB	329	429
APS *I*^mr^720[2] IBM DSAS 3720 mechanism	700MB	499	599
APS MS1.2AV[5] Micropolis 2210AV mechanism	965MB	759	859
APS *I*^mr^1.0[5] IBM 0662 mechanism	1003MB	699	799
Mac User LABS ★★★★ APS MS 4110[5] Micropolis 4110 mechanism	1002MB	649	749

Model	Capacity	Internal	SR2000
1029MB - 2845MB			
APS Q 1080[2] Quantum 1080S mechanism	1029MB	$699	$799
Mac User LABS ★★★★ APS MS 1.7 AV[5] Micropolis 2217AV mechanism	1612MB	999	1099
APS MS 1.7[5] Micropolis 2217S mechanism	1682MB	929	1029
APS *I* 2.0[5] IBM 0664 mechanism	1920MB	1299	1399
APS ST 2.0[5] Seagate ST 12550N Barracuda mech.	2040MB	1399	1499
APS MS 3.0G[5] Micropolis 1936 mechanism	2845MB	1999✱	2199
APS ST 4.0[5] Seagate ST 15150 mechanism	4294MB	2799	2899
APS ST 9.0[5] Seagate ST410800N mechanism	8673MB	4149✱	4349

Internal drives for Quadra 800 and Centris 610 available.
DATerm™ patent pending
Copyright © 1994 APS Technologies

APS Technologies 6131 Deramus
Kansas City, MO 64120

1-5 Denotes length of manufacturer's warranty
✱ External Case is Special Full Height Only
** Internal Price Listing*

POWERBOOK DRIVES

Model	Capacity	Internal	LW Pro 630	Companion II AC/DC
APS PB 85[1]	80MB	—	$249	—
Mac User LABS ★★★★ APS T 340[1]	324MB	399	399	549
APS T 520[1]	500MB	599	549	649

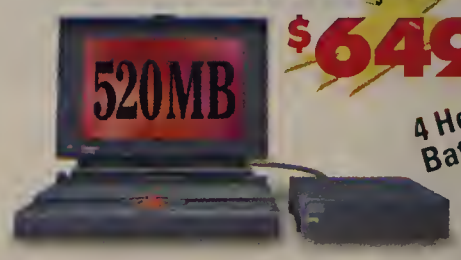
PORTABLE STORAGE

The Perfect Home for your 2.5" PowerBook Drive.

Companion II Enclosures	AC	AC/DC
Enclosure	$89	$139

Amazing price on the new APS T 520 Companion II Drive in our SR 1000 enclosure featuring DATerm

$649



4 Hour Battery!

MACWORLD MW SERVICE HERO

APS Technologies

1-800 874-1428

Get the Best: APS DAT

Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATerm, Digital Active Termination

APS HyperDAT™ $1199

APS HyperDAT

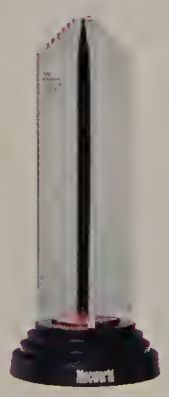
If you need high-speed backup (not the kind that ties your server up and slows down your network), you need the DDS-2 power of the APS HyperDAT! Back up locally at rates as high as 28MB per minute! Pack up to 10GB on a single tape! Best of all, your regular DDS and DDS compression tapes can be read in the APS HyperDAT, too!

APS DAT

The amazing APS DAT offers you great performance and reliability. Get up to 2.0GB on a 90 meter tape with backup speeds as high as 10MB per minute.

All APS DATs Include Retrospect, a $139 Value, Free!

APS DAT $799



Macworld's 1994 World-Class Award for Alternative Storage goes to the APS line of DAT Drives.

"In tha fiercely competitiva world of tha humble dasktop hard drive, nobody sweats tha details mora than APS. Elagant design, quality components, and rock-solid construction distinguish the compact APS SR 2000 Case."
— *Editors of MacUser*

THE APS ADVANTAGE

- 30-Day MBG
- Toll-Free Support
- Awesome Warranties
- Factory Direct Quality
- Rapid Repair Return
- 24-Hour Product Sales

DAT

Model	Capacity*	Internal	SR 2000
APS DAT[2]	1.8-2G on 90m tape	$749	$799
APS Turbo DAT[2]	4-5G on 90m tape	949	999
APS HyperDAT[1]	8-10G on 120m tape	1149	1199

**Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.*

DAT Media (Units)	*1-4*	*5-19*	*20+*
60 meter DAT Tapes —	*$10*	*$9*	*$8*
90 meter DAT Tapes —	*12*	*11*	*10*
120 meter DAT Tapes —	*23*	*22*	*21*

All APS DAT Drives Include Retrospect by Dantz & 1 FREE DAT Tape

APS 1.3 MO $1999*

** Does not include cartridge. External Configuration*

CD ROM

Model	SR 2000
APS T 4101	$299
APS T 3401	399

MAGNETO OPTICAL

Model	Internal*	SR 2000
APS 128MB MO[1]	$629	$729
APS 230MB MO[1]	899	999
APS 1.3Gig MO[1]	2009	2109

All MO Drives Include 1 FREE Cartridge

MO Media (unformatted)	*1-4*	*5-19*	*20+*
128MB cartridge —	*$35*	*$34*	*$29*
230MB cartridge —	*46*	*45*	*40*
1.3Gig cartridge —	*110*	*109*	*104 (1024KB/s)*

SYQUEST

APS SQ 555[2]	44MB	$259
APS SQ 5110c[2]	44/88MB†	429
APS SQ 5200[2]	200MB††	499
APS SQ 3105[1]	105MB	329
APS SQ 3270[1]	270MB	499

† Does not format 44MB cartridges
†† Does not format 44MB & 88MB cartridges
All SyQuest Drives Include 1 FREE Cartridge

SyQuest Media	*1-4*	*5-19*	*20+*
44MB cartridge —	*$59*	*$58*	*$57*
88MB cartridge —	*79*	*77*	*76*
200MB cartridge —	*89*	*87*	*86*
105MB cartridge —	*59*	*57*	*56*
270MB cartridge —	*69*	*67*	*66*

Prices listed are for unformatted media.

APS INTERNATIONAL
Global Storage Resource

APS Intl. Sales Line (816) 920-4109
On parle français au (816) 920-4135
Se habla español en (816) 920-4136
Si parla l'italiano in (816) 920-4137
Wir sprechen Deutsch (816) 920-4138
どうぞご遠慮なく日本語のファックスでもお申込み下さい。
24-Hour Intl. Fax: (816) 483-3077

International Sales

POWERBOOK STUFF

APS SCSI DOC w/ PowerMerge Lite $39

Palm-Sized 25–30 PowerBook SCSI Adapter that includes a docking adapter for PowerBook and termination power indicator. Receive Power-Merge Lite Free with every APS SCSI DOC!

APS SCSI BOY $19

Rugged Palm-Sized 25–30 PowerBook SCSI Adapters

APS PowerBalls *(Original 4 Pack)* $9.99

Color Set I: yellow, orange, green and hot pink.

APS PowerBalls *Color Set II* $15.99

Color Set II: blue, red, purple, and the eight ball.

YES! All APS Drives Are Power PC Mac Compatible!

Same day shipping for personal checks (Restrictions apply)

Visa, Master Card, Discover, American Express: No Surcharge.

- 30-day money-back guarantee • (Excluding opened software). Your risk is the cost of shipping
- Drive-for-Drive Repair or Replacement Warranty • The warranty length is denoted by the superscripted number next to each drive model APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- All prices and specifications are subject to change without notice.
- Refused orders subject to restocking fee.
- Hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh - where applicable. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, at least 9 MB of compacted publicly-distributable software, and APS Technologies' APS POWER TOOLS SCSI formatter/hard disk partitioner
- All external drive products and cases come with a premium 25 x 50 SCSI cable. Companion II drives, (not cases) include a 30 x 50 PowerBook SCSI cable
- International customers must pay for all shipping charges.
- Toll-free technical support as needed. Regular hours are 8 am to 8 pm Monday thru Friday, 9 am to 5 pm Saturday, Central Time.

1-800 874-1428

Circle 62 on reader service card

Get Power Macintosh Memory From Us And We'll Let You In On A Little Trade Secret.

Trade In Your Memory For Big Discounts.

It's no secret what makes TechWorks the leader in memory products. Exceptional quality and Outrageous Customer Service. And we're bringing this same commitment to our new line of Power Macintosh memory. Now for a limited time you can trade in your old memory when you upgrade your Macintosh. So give us a call for details. And learn how this little trade secret can save you big money.

TECHWORKS

Call! 1-800-395-7924

Circle 244 on reader service card

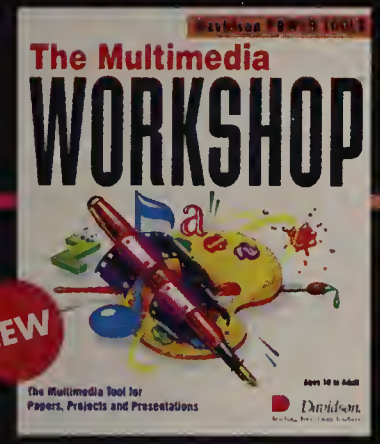
Call today for your FREE 236-page Fall Full-Line Catalog!

800-610-5003

USA/Canada

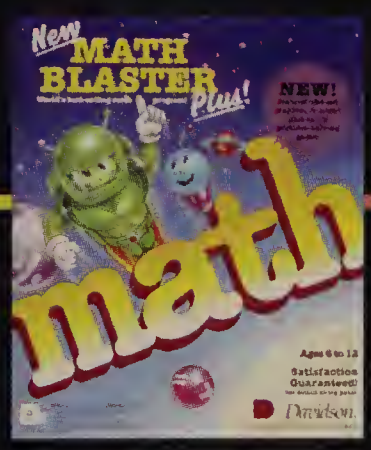
708-888-8300 In Illinois

Educational Resources is America's #1 supplier of educational technology to schools. We have educators on staff waiting to answer your questions and help you choose the educational programs that best suit your needs. Call today for your FREE Fall 1994 Full-Line Catalog.



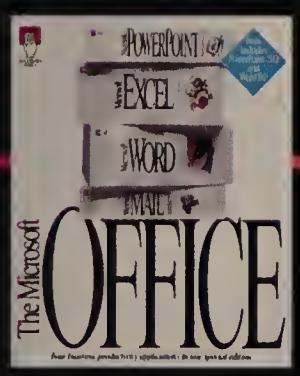
$46.95 MAC
(Retail $79.95)
Ages 10-up

$34.95 MAC
(Retail $59.95)
Ages 10-up

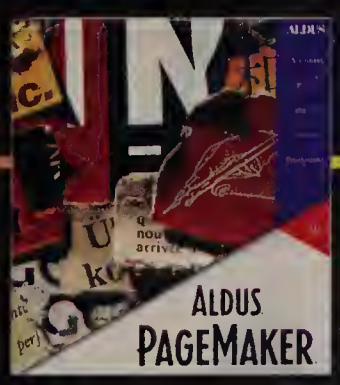


$32.95 MAC
(Retail $59.95)
Ages K-6

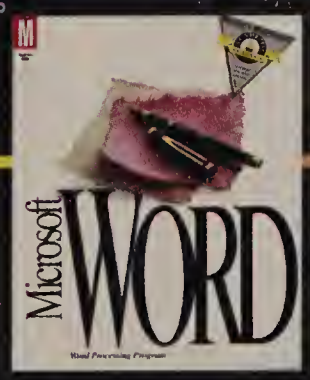
$24.95 MAC
(Retail $39.95)
Ages 4-8



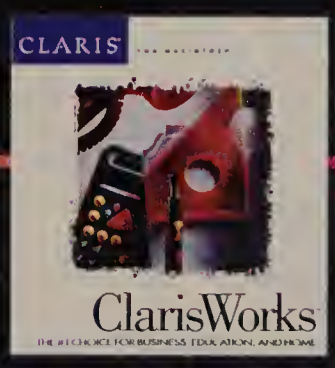
$149.95† MAC
(Retail $779.95)



$149.95†
(Retail $895.00)



$74.95† MAC
(Retail $495.00)



$139.00† MAC
(Retail $299.00)

Save with Academic Versions! • †School P.O., Teacher or Student ID required

Educational Resources • 1550 Executive Drive, Elgin, IL 60123 • FAX 708-888-8499/8689

• Checks & School P.O.s welcome • $25 min. on charge cards • Free shipping over $400 in U.S. • Under $400 add 5% shipping with $5 min • Canada add $8.00 on orders up to $100.00; add $10.00 on orders up to $200.00; add $15.00 on orders up to $500.00; add $20.00 on orders over $500.00 – also add 7% GST • Prices effective through 11/30/94

Circle 210 on reader service card

DIGITAL

AXIS INTERNATIONAL

Wacom Digitizers

12" x 18" Tilt with 2 Handed Input Calligraphy/Cardless Pen

$659

Wacom #UD1218RM

12"x12"	$499
ARTZ	$299
ARTZ/Painter 2.0 Bundle	$479
NEW 4"x5" - Compatible with Mac or PC	$199

PhotoShop 2.5.1 **$199**
With purchase of Scanner or Wacom Tablet
FULL VERSION!

UMAX Scanners

Vista S6 - 600dpi One-Pass Scanner	$699
UMAX 630 - 600dpi	$549
UMAX 840 - 800dpi	$679
UMAX 1260 - 1200dpi	$899
PowerLook - including Transparency Adapter	$3299

UMAX Transparency Adapter **$429**

FUJIX FV-7 $995

Slide Scanner/Copy-Stand Scanner/Video Camera for capturing and previewing slides, negatives, photos, 3D-objects, or full motion scenes.

Kodak ColorEase PS

Color DyeSub Printer/PS level 2..... $6,589

One Year Free On-Site Service!
$940 in free supplies thru September!
30-Day Satisfaction Guarantee!

Leasing Now Available

512-329-7001
800-521-6111
Fax 512-327-0921

Wire transfer, COD, all major credit cards accepted. UPS, FedEx, DHL 2-day to Europe.
5000 Plaza On The Lake, STE 250, Austin, TX, USA 78746

American Express Cards · MasterCard · VISA · DISCOVER NOVUS · Diners Club International

17" Trinitron

$769

- Plug & Play with On-Board Video for the Quadras, AVs, Centris, LCIII, **PowerMacs!!**
- WYSIWYG, 832x624, .26mm.dot, 75Hz
- 1 Year Warranty
- Dealers, call for volume discounts
- **$999** with 24-bit Accl. NuBus Card
- **$1,659** with TouchScreen & Software

20" Color Display

$1,389

- Multi-Scan, Multi-Res, Ikegami CN-20A
- MacUser 4-Mice Rating!
- 24-bit Accel Video Card Bundle **$1,799**

Microtek 45T Slide Scanner

$5895

35mm to 4x5" Slide Scanner, 36-bit 1000 x 1000 dpi, Includes full version of Adobe PhotoShop & DCR Color Calibration Software

JVC CD-ROM Products

Personal Archiver - External	$3559
Personal ROMMaker	$5649

Includes 1GB Hard Drive, writes all CD-ROM standards,including Red-Book Audio

BLANK CD MEDIA- 74 Minute, 640 MB	$19

10/94

Circle 83 on reader service card

DIRECT CONNECTIONS

800-572-4305

30 DAY MONEY-BACK

Fully Compatible power pc drives

INT'L:612-937-9604
FAX:612-937-6285
HOURS: M-F 8:00-6PM CST

SHIPPING DRIVES FOR 7 YEARS !!

DISCOVER NOVUS · VISA · MasterCard

HARD DRIVES

FUJITSU 530MB INTERNAL $339

FUJITSU — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
240MB*	2.5"	14MS	$ 315	$ 375
530MB**	3.5"	13MS	$ 339	$ 399
1.2GIG	3.5"	8.5MS	$ 630	$ 690

Seagate — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	MODEL	EXTERNAL
1.2GIG	3.5"	9MS	ST31200N	$ 715
2.4GIG	3.5"	9MS	ST12400N	$ 1315
2.5GIG	3.5"	8MS	Barracuda 2	$ 1440
2.5GIG	3.5"	8MS	Barracuda 2 WIDE	$ 1499
3.4GIG	5.25"	10MS	Elite 3	$ 1999
4.1GIG	3.5"	8MS	BARRACUDA 4	$ 2335
9.0GIG	5.25"	11MS	Elite 9	$ 3749

CONNER — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	MODEL	EXTERNAL
330MB**	3.5"	12MS	CFA340S	$ 320
545MB**	3.5"	12MS	CFA540S	$ 450
1.0GIG	3.5"	9MS	CFP1060S	$ 699

Quantum — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	MODEL	EXTERNAL
1.0GIG	3.5"	9MS	E1080S	$ 750
2.2GIG	3.5"	9.5MS	E2160S	$ 1159

HITACHI — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
3.7GIG	5.25"	12.8M	$ 1745	$ 1845

MONITORS

Sony GDM-15SF1	15"	$ 469
Sony GDM-17SE1	17"	$ 1059
Sony GDM-20SE1	20"	$ 1899
RasterOps Horizon 24		$ 2259
RasterOps Paintbd Turbo		$ 1159
RasterOps 8XL		$ 459
RasterOps Li		$ 339

CD ROMS

Toshiba 4101	$ 275
Toshiba 3401	$ 365
Sony CDU-561	$ 385
Ricoh 1000 RECORDABLE CD—MAKE YOUR OWN!	$ 2495
Yamaha 4 speed recorder	$ 5245

DIRECT CONNECTIONS 7668 EXECUTIVE DR. EDEN PRAIRIE, MN 55344 * 1 yr warranty. ** 2 yr warranty. Gov't, Corp. and Univ. P.O's accepted. 30 day money back does not apply towards monitors.

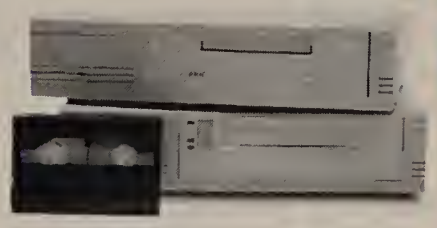
OPTICAL DRIVES

128MB EXTERNAL $599

INCLUDES ONE CARTRIDGE

1 YEAR WARRANTY

CAPACITY	MODEL		ACCESS		EXTERNAL
128MB	Ricoh		30MS		$ 599
230MB	Fujitsu		30MS		$ 925
230MB	Olympus	2YR. WARRANTY	28MS	4200 RPM	$ 915
650MB	Sharp		40MS		$ 1699
1.3GB	Ricoh		40MS		$ 1999
1.3GB	Sony		40MS		$ 2099



TAPE BACKUP SYSTEMS

8GIG EXTERNAL $999

INCLUDES TAPE + RETROSPECT SOFTWARE

2 YEAR WARRANTY

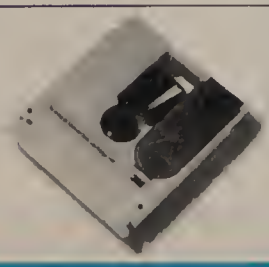
CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
250MB	Tandberg TDC 3660	DC6250	$ 445	$ 499
520MB	Tandberg TDC 3660	DC6250	$ 565	$ 625
1.3-2GIG	DC DAT	4MM	$ 729	$ 789
1.3-4GIG	DC DOUBLE DAT	4MM	$ 839	$ 899
4.0-8GIG	Connor 4326 DDS-2	4MM	$ 939	$ 999
4.0GIG	Sony 5200 DDS-2	4MM	$ 989	$ 1049
4.0-8GIG	Sony 5000 DDS-2	4MM	$ 1029	$ 1089
1.3-5GIG	Exabyte 8205	8MM	$ 1539	$ 1599
1.3-10GIG	Exabyte 8505	8MM	$ 2179	$ 2279

RAID SYSTEMS

CUSTOM CONFIGURATIONS

"This Array is the one to beat." - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Didgital Video magizines.

* Fastest RAID for Video Vision Users. 4.0 GIG Barracuda 2 RAID. $ 4295
* 8100 Users! Turn your 1gig into a 2gig RAID for only $ 999



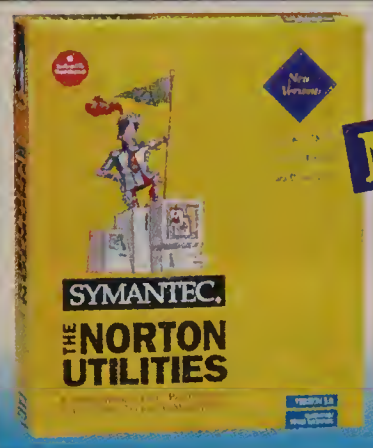
MEDIA

60M	Tape	$ 10	128MB	Optical	$ 28
90M	Tape	$ 12	230MB	Optical	$ 35
112M	Tape	$ 18	650GIG	Optical	$ 79
120M	Tape	$ 22	1.3GIG	Optical	$105

Circle 121 on reader service card

MacWAREHOUSE®

Upgrade now!



NEW!

Norton Utilities 3.0 Upgrade

If you have a Mac with a hard drive, then you NEED the #1 Macintosh Utilities program, Norton Utilities 3.0. Packed full of new features, Norton Utilities 3.0 is the best-selling data recovery, protection and back-up software. Upgrade today! Proof of ownership required. Call for details. *Publisher:* Symantec

Full version of Norton Utilities 3.0 UTI 0569 $99.95

Item# UPG 0116

Accelerated for Power Macintosh

$39.95

Power-XPress!

QuarkXPress Power Macintosh

This new version of QuarkXPress is the clear choice for publishing professionals. In addition to the features of Quark XPress 3.3, this program includes: new XTensions™, new fonts, sample Quark Libraries, superb typographical control, file compatibility with both Mac & Windows, professional trapping tools, polygon text boxes, many helpful palettes (like measurements, style sheets, tools, colors, etc.) and much more. Get QuarkXPress today and move production and creativity to a new level! *Publisher:* Quark

CD-ROM version only

Item# DTP 0122

$659.95

NEW!

New Wild & Wacky Modules!

After Dark 3.0 Upgrade

NEW!

All new modules like Bad Dog, You Bet Your Head, New Fish and more!

Item# UTI 0561

$19.95*

**Upgrade price reflects $10 REBATE from manufacturer. Price without rebate is $29.95. Call for details.*

Simpsons Screen Saver NEW!

Join the whole Simpson clan in these hilarious modules that will keep you laughing all day! *Publisher:* Berkeley Systems

Item# UTI 0574

$29.95

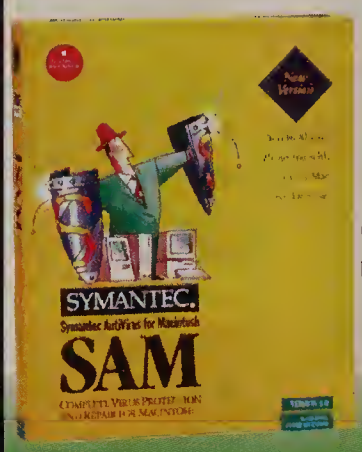
UPGRADE NOW!

NEW!

SAM 4.0 Upgrade

The best-selling, highest rated virus protection, detection and repair program is now even better! SAM (Symantec Anti-Virus for the Mac) is the worldwide standard in Mac virus protection. Key Features: Virus detection & repair, proactive prevention, automatic virus updates, faster scans, custom decontamination disk and more. Order New SAM 4.0 today! Proof of ownership required. Call for details. *Publisher:* Symantec

Full version of SAM 4.0 UTI 0567 $69.95



Accelerated for Power Macintosh

Item# UPG 0110

$29.95

Color Inkjet Printer Blowout!

HP DeskWriter 550C

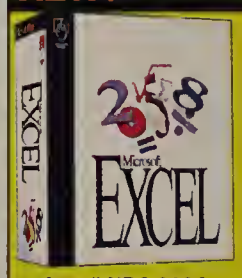
Its never been this easy or affordable to add color to your documents! Comes with both color and black ink cartridges built right in, so printing is simple. A print speed of up to 3 pages per minute in b&w and 4 minutes per page in color. Features: clear, crisp 300-dpi black and color printing; 35 type fonts, scalable to 250 pts; standard AppleTalk and serial interfaces; built-in print spooler; quiet operation and more. *Manufacturer:* Hewlett-Packard

Now only **$399!**

Item# INP 0320

while supplies last

NEW! Microsoft Excel 5.0 Upgrade



Works the way you want! Features like Autofill, Autofit & Auto-select simplify tasks for you. The customizable Toolbar and Shortcut Menus put your favorite commands at your fingertips. *Publisher:* Microsoft

Full version of Excel 5.0 BUS 0443 $295

Item# UPG 0104

$99*

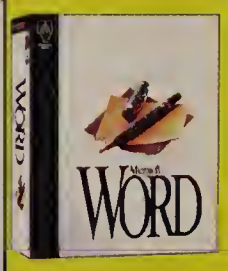
**Upgrade price reflects a $30 REBATE direct from manufacturer. Price without rebate is $129. Upgrade rebate expires for 12/31/94. Call for details.*

Accelerated for Power Macintosh

NEW! Microsoft Word 6.0 Upgrade

Hundreds of features to make creating and formatting documents simple. Includes: Auto Correct which corrects misspellings and typing errors; Editable Print Preview displays up to 128 WYSIWYG pages; customizable toolbars give you access to tools you use everyday, and other new features. *Publisher:* Microsoft

Full version of Word 6.0 WRD 0089 $295



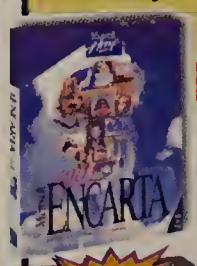
UPG 0105

$99*

**Upgrade price reflects a $30 REBATE from manufacturer. Price without rebate is $129. Upgrade rebate expires 12/31/94. Call for details.*

Get Microsoft ENCARTA

A Complete Multimedia Encyclopedia on ONE CD-ROM!



FOR ONLY **$89!***

- *More than 25,000 articles!*
- *Thousands of sounds!*
- *Thousands of images!*
- *Hundreds of maps and charts!*

Ask for item# BND 0348

** when you buy the double speed CD-ROM drive (for $199) at the same time. Encarta/CD-ROM Drive/2 FREE CDs total price $288*

To order this Power User Double-Speed CD-ROM drive by itself, ask for item# DRI 0891.

Get this *Double Speed, Multi-Session* CD-ROM Drive for only $199!

Plus, 2 CD-ROMs FREE!

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the *Space Shuttle* and *Oceans Below* CD-ROMs absolutely FREE!

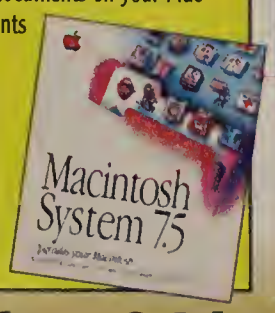
NEW! Macintosh System 7.5

Includes over 50 new enhancements in the Finder, cross-platform compatibility, task automation, PowerBook utilities, and much more. Work with DOS and Windows documents on your Mac without file translators. Open documents directly from the find file window. Create on-screen reminders with the new stickies feature and more.

Publisher: Apple Computer, Inc.

Item# SYS 0022

$99



SIMMs as low as $49.95

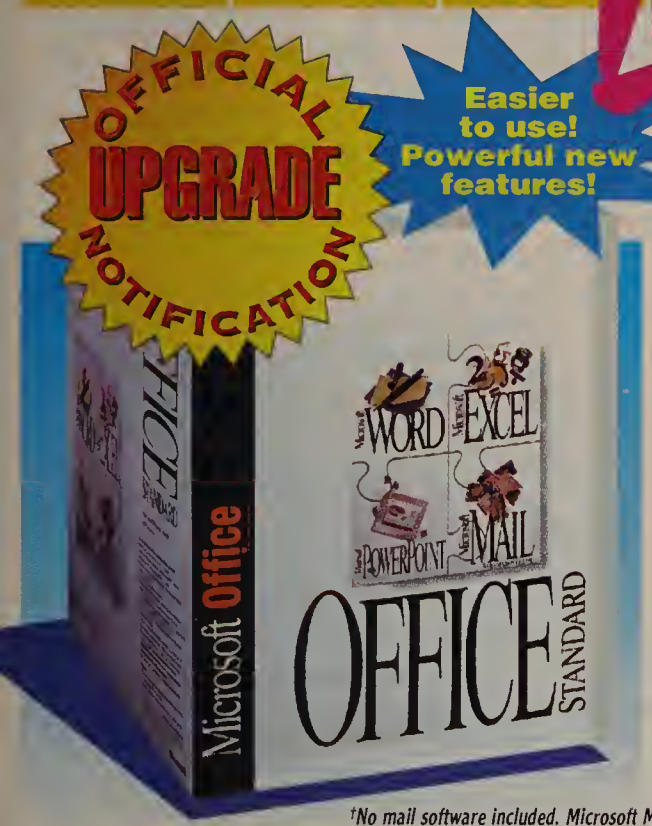
A Power User memory upgrade will dramatically increase the power of your Mac. Memory chips come factory-installed on plug-in cards, called SIMMs (Single Inline Memory Modules). **Please call for the latest prices and availability and our sales staff will help make your choice an easy one.**

CHP 0012

1MB 120ns **$49.95**

Order toll-free 24 hours a day, 7 days a week! 1-800-255-6227

THE Mac SUPERSTORE™



Easier to use! Powerful new features!

Upgrade to New Microsoft OFFICE 4.2 for only $239*

Ask for Item# BND 0434

**Price is after a $40 manufacturer's mail-in rebate. Price before rebate is $279. Upgrade rebate expires 12/31/94. Call for details.*

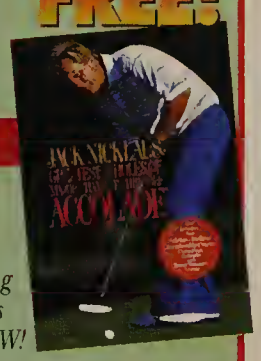
All the applications you need- Word 6.0, Excel 5.0, PowerPoint 4.0 and a workstation license for Microsoft Mail†-that work together as though they're a single program. New IntelliSense™ technology lets you set tabs, add bullets, fix typos, or format your document in a single step. Since all the Microsoft Office programs work together seamlessly, you can simply drag and drop items from one program into another. The Cue Cards feature provides step-by-step instructions for any task as you work through the job. *Publisher:* Microsoft

Full version of Office 4.2:
Ask for Item# BND 0430 $475

†No mail software included. Microsoft Mail License allows you to make and use one copy of the workstation disk included with Microsoft Mail Server. You must currently own Microsoft Mail Server or purchase it separately.

Buy new Microsoft Office 4.2 NOW, and get Jack Nicklaus' Greatest 18 Holes of Major Championship Golf

FREE!



absolutely FREE!

Tee off on the most challenging 18 holes of major championship golf with the legend who hand-picked each one–Jack Nicklaus! This is one of the most realistic and visually stunning computer golf games ever made–and it's yours FREE when you buy Microsoft Office 4.2 NOW!

(Shipped in promotional packaging)Hurry! Offer good while supplies last!

BUSINESS & PRESENTATION

A LASTING IMPRESSION
ResumExpert (Full line available) ..... ea. 49.
ALDUS
BUS0449 DateBook Pro 4.0 w/ FREE Type Twister ... 49.
BUS0450 TouchBASE Pro 4.0 w/ FREE Type Twister .. 49.
BASELINE PUBLISHING
SPL0029 Thunder 7 1.5. ..... 56.
CLARIS
DAT0112 FileMaker Pro. 2.1 ..... 269.
INTUIT
FIN0201 Quicken 4.0 ..... 44.95
LOTUS DEVELOPMENT CORPORATION
BUS0188 Lotus 1-2-3 for Macintosh 1.1 ..... 299.
MICROSOFT
BUS0443 Excel 5.0 ..... 295.
BUS0181 Project 3.0 ..... 445.
BND0430 Office 4.2 w/ FREE Jack Nicklaus' Golf ... 475.
BUS0444 PowerPoint 4.0 ..... 295.
WRD0089 Word 6.0 ..... 295.
BESTIWARE
FIN0212 M.Y.O.B. 4.0 w/o Payroll 59.95
FIN0213 M.Y.O.B. 4.0 w/ Payroll 109.95

COMMUNICATIONS & NETWORKING

APPLE COMPUTER, INC.
NET0250 AppleShare 3.0.1 ..... 969.
COM0211 Apple Remote Access ..... 189.
UTI0514 Apple Personal Diagnostic 99.95
SOFTWARE VENTURES
COM0209 Microphone Pro 2.0 ..... 149.95
DAYNA COMMUNICATIONS, INC.
NET0358 EtherPrint-3 Plus ..... 449.
FARALLON™ COMPUTING
NET0007 PhoneNET® Plus, SE & II 39.95
GLOBAL VILLAGE (FULL LINE AVAILABLE)
PowerPorts ..... Call.
HAYES
MOD0130 ACCURA 144+Fax 144 ..... 149.95
MOD0129 ACCURA 96+Fax96 145.95
INSIGNIA (FULL LINE AVAILABLE)
UTI0433 AccessPC 3.0 ..... 89.95
POWERUSER®
MOD0116 14.4 Send/Receive Fax Modem 149.95
SHIVA
NET0246 LANRover/L ..... 599.
ZOOM TELEPHONICS
MOD0109 VFX V.32bis MacPack 149.95

GRAPHICS & DESIGN

ADOBE SYSTEMS, INC. (FULL LINE AVAILABLE)
GRA0772 Illustrator 5.5 ..... 389.
GRA 0814 Photoshop 3.0 ..... 559.95
ALDUS
GRA0654 FreeHand 4.0 ..... 389.95
GRA0856 Paint & Publish w/FREE Type Twister .... 89.
DTP0088 PageMaker 5.0 ..... 549.
UPG0032 PageMaker 5.0 Upgrade ..... 149.
APPLE COMPUTER, INC.
GRA0347 QuickTime Starter Kit ..... 79.
CLARIS
GRA0350 MacDraw Pro 1.5 ..... 269.95
GOLD DISK
GRA0707 Video Director 1.5 ..... 129.95
PIXAR
FON0550 Pixar Typestry 2.1 ..... 189.
QUARK, INC.
DTP0110 XPress 3.3 ..... 589.
DTP0122 XPress 3.3 for Power Mac ..... *only* 659.95
RAY DREAM
GRA0605 Ray Dream Designer 3.0 ..... 249.95
SOFTKEY SOFTWARE
FON0480 KeyFonts ..... 49.

EDUCATIONAL & ENTERTAINMENT

BRODERBUND
EDU0774 Kid Pix 2.0 ..... 39.
NORDIC SOFTWARE
EDU0051 MacKids Turbo Math Facts 2.0 ..... 25.
PERSONAL TRAINING SYS.(FULL LINE AVAILABLE)
Excel 5.0, Word 6.0, Pagemaker 5.0 ..... ea. 49.
THE SOFTWARE TOOLWORKS
BND0169 Miracle Piano Bundle 199.95

UPGRADES & DRIVES

DAYSTAR DIGITAL
DRI0942 66 MHz Power Pro 601 ..... 1399.
DRI0943 80 MHz Power Pro 601 ..... 2149.
POWERUSER®
CHP0012 1 Meg SIMMs 120ns 49.95
CHP0101 4 Meg SIMMs for LC III & Centris 610/650....179.
BND0176 44/88C MB SyQuest w/ Cartridge .. 419.95
BND0361 44MB SyQuest w/ Cartridge 228.95

INPUT & OUTPUT

CAERE
INP0289 OmniScan 299.95
KENSINGTON
INP0231 Turbo Mouse (SE or II) 4.0 ..... 109.
MICROTEK (FULL LINE AVAILABLE)
INP0246 Microtek ScanMaker II ..... 699.
SUPERMAC
MON0053 SuperMatch 20+ Color Display ..... 1699.

POWERBOOK PRODUCTS

BATTERY TECHNOLOGY INC.
ACC0840 Battery for Powerbook 59.95
KENSINGTON
INP0221 Notebook Keypad ..... 79.
SOPHISTICATED CIRCUITS
INP0232 Powerpad 69.95

UTILITIES & PROGRAMMING

APPLE COMPUTER, INC.
SYS0004 System 7.1 Personal Upgrade Kit ..... 45.
SYS0010 At Ease 2.0 ..... 45.95
CAERE
UTI0293 OmniPage Direct 99.95
MICROMAT COMPUTER SYSTEMS
UTI0285 MacEKG 2.0 ..... 89.
SYMANTEC CORPORATION
UTI0569 Norton Utilities for the Mac 2.0 ..... 99.95
UTI0567 Symantec Antivirus 4.0 (SAM) 69.95

MacWAREHOUSE carries more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. Just fill in the information requested below and mail the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.

Order by Midnight (E) for Overnight Delivery – Only $3.00!

To order, call toll-free

1-800-255-6227

(1-800-ALL-MACS)

Call 24 hours a day, 7 days a week.

Inquiries: 908-367-0440 FAX Your Order to: 908-905-9279
Compuserve Code: GOMW

NEW! Express Customer Service Number:
1-800-925-6227

MacWAREHOUSE®
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
©1994 Micro Warehouse Inc.

- All major credit cards accepted. No surcharge.
- Your credit card will not be charged until your order is shipped.
- If we ship a partial order, we pay the freight on the remaining portion.
- All U.S. shipments are insured at no extra charge.
- C.O.D. orders accepted (add $6.00 including shipping)-$1,000 maximum.
- All products are covered by a 120-day limited warranty. Defective software replaced immediately. Hardware replaced or repaired at our discretion.
- Some products may have system requirements. Call for details.
- **Sales tax:** CT residents add 6%, NJ residents add 7%, Ohio residents add appl. tax.

SHIPPING

- All orders add $3.00 per order. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day.)
- Orders placed by 12:00 MIDNIGHT (EST) (weekdays) for "in-stock" items ship same day (barring system failure, etc.) for overnight delivery.
- C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS Ground). Charge is $6.00 including shipping.
- Alaska, Hawaii, outside continental U.S., APO/FPO call 908-367-0440 for information. Some products are not available outside the U.S.
- We regret that we cannot be responsible for typographical errors.
- For faster service for existing customers, our computers recognize incoming calls by the telephone number and instantly locate your records.

©Copyright 1994 MicroWarehouse, Inc. MacWAREHOUSE® is a division of MicroWarehouse, Inc. MacWAREHOUSE® and MicroWarehouse® are registered servicemarks of MicroWarehouse, Inc. Item availability and price subject to change without notice Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc.

FREE CATALOG SUBSCRIPTION **MW1194**

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name _____

Address _____ Apt. _____

City _____ State _____ Zip _____

(Expect to receive your first issue within 4-6 weeks).

☐ MacWAREHOUSE® ☐ Data Comm WAREHOUSE™
☐ MicroWAREHOUSE® ☐ CD ROM WAREHOUSE™

Circle 150 on reader service card

MEGAHAUS 1-800-786-1184

- Our 8th year selling quality drives at incredibly low prices.
- 30 Day money back guarantee.
- Fast, friendly, and smart service.
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- We appreciate your business!

Quantum™

#1 HARD DRIVE FOR MAC!

MegaHaus is your #1 source for Quantum drives.
- Low price guarantee on all Quantum Drives!
- Same day shipping on most orders!

Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
170MB	17ms	3600	32K	2yr	ELS170S	$169	$229
270MB	12ms	4500	128K	2yr	LPS270S	$194	$254
340MB	12ms	4500	128K	2yr	LPS340S	$239	$299
540MB	12ms	4500	128K	2yr	LPS540S	$293	$353
540MB	9.5ms	5400	512K	5yr	EMP540S	$489	$549
1080MB	9.5ms	5400	512K	5yr	EMP1080S	$633	$693
1440MB	9.5ms	5400	512K	5yr	EMP1440S	$819	$879
2160MB	9.5ms	5400	512K	5yr	EMP2160S	$1099	$1159

SyQuest

MegaHaus is your #1 source for Syquest drives.
- Low price guarantee on all Syquest drives!
- 1 FREE cartridge with each drive!
- 2 year warranty on drive and case!
- 5 year warranty on all cartridges!
- Same day shipping on most orders!

Genuine Syquest Media
Qty 5 or w/ purchase

44MB	$59
88MB	$68
105MB	$56
200MB	$79
270MB	$69

Capacity	Speed	Compatible	Model	Buffer	Internal	External
88MB	20ms	44, 88MB	SQ5110C	32K	$319	$379
105MB	14.5ms	105MB	SQ3105S	64K	$265	$329
200MB	18ms	44,88,200MB	SQ5200C	64K	$449	$509
270MB	13.5ms	105, 270MB	SQ3270S	128K	$429	$489

FUJITSU

HOT SPECIAL!

- High quality Japanese made hard drives!
- 530MB 2yr Wty. 1080MB 5yr Warranty!
- Low price guarantee!

Capacity	Internal	External
530MB	$285	$345
1080MB	$619	$679

OPTICAL DRIVES

Smart STORAGE SOLUTIONS

- High performance optical drives.
- Ask for your free "Dare to Compare" specification brochure.
- Includes SCSI Manager 4.3 compliant driver, cables, and 1 free disk.

Capacity	Model	Internal	External
128MB	SSS128	$649	$699
230MB	SSS230	$849	$899
1.3Gig	SSS1300	$2199	$2269

PIONEER

CD ROM CHANGERS

- No more changing disks over and over.
- Low price guarantee on Pioneer!
- Requires only 1 SCSI ID number.

DRM602X, 6 Disc, Double Speed	$719
DRM604X, 6 Disc, Quad Speed	$1069
DRM1804X, 18 Disc, Quad Speed	$2099
500 Disc, Quad Speed w/ 2 drives	$15,150
500 Disc, Quad Speed w/ 4 drives	$17,550

MICROPOLIS

- New AV series hard drives are specifically designed for enhanced digital video and audio performance in applications such as multimedia, desktop publishing, and video editing.
- We will beat any advertised Micropolis price.

Capacity	Model	Internal	External
1000MB	MC4110AV	$699	$759
1700MB	MC2217AV	$979	$1039
3000MB	MC1936AV	$2049	$2099

HARD DRIVES

Capacity	Speed	RPM	Buffer	Brand	Warranty	Internal	External
240MB	14ms	4500	256K	Fujitsu	1 Year	$299 (2.5" for Powerbook)	
530MB	13.8ms	4500	256K	Fujitsu	5 Years	$285	$345
720MB	12ms	4500	192K	IBM	2 Years	$439	$499
1052MB	8.5ms	5400	256K	Micropolis	5 Years	$629	$689
1080MB	9.5ms	5400	256K	Fujitsu	5 Years	$619	$679
1750MB	10ms	5400	256K	Micropolis	5 Years	$909	$969 BEST BUY!
2040MB	9.2ms	5400	512K	IBM	5 Years	$1249	$1299
2145MB	8ms	7200	1024K	Seagate	5 Years	$1319	$1399
2148MB	9ms	5400	512K	Seagate	5 Years	$1189	$1249
3020MB	11ms	5400	256K	Micropolis	5 Years	$1959	$2029
4250MB	11ms	5400	1024K	IBM	5 Years	$2239	$2339
4290MB	9ms	5400	1024K	Seagate	5 Years	$2249	$2349
4290MB	8ms	7200	1024K	Seagate	5 Years	$2399	$2499
9100MB	10ms	5400	256K	Micropolis	5 Years	$3999	$4099

Includes formatting software and cables. We stock multiple bay enclosures for custom configurations.

CD ROM DRIVES

Brand	Model	Speed	Transfer	Buffer	Internal	External
Toshiba	XM3401	200ms	330KB/sec	256K	$279	$339 BEST BUY!
NEC	CDR510	195ms	450KB/sec	256K	$329	$389
Plextor	4PLEX	150ms	600KB/sec	1MB	$549	$609

Includes driver software with music play, $25 Photo CD processing coupon, and cables. Multi Drive CD Towers in stock!

TAPE DRIVES

Capacity	Type	Brand	Internal	External	Capacity	Type	Brand	Internal	External
250MB	QIC 150	Archive	$459	$529	4-8Gig	DDS DAT	Conner	$939	$999
580MB	MiniCart	Teac	$539	$599	4-8Gig	DDS DAT	HP	$1029	$1079
.75-1.5Gig	MiniCart	Exabyte	$589	$649	4-10Gig	DDS2 DAT	Sony	$1079	$1139
2Gig	DAT	Conner	$819	$869	4-10Gig	DDS2 DAT	Conner	$1069	$1129
2Gig	DAT	HP	$929	$979	4-10Gig	DDS2 DAT	HP	$1299	$1349

Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTape Software mounts DAT on desktop $289.

OPTICAL DRIVES

Capacity	Speed	Brand	Cache	External	Capacity	Speed	Brand	Cache	External
1.3Gig	23ms	HP	512K	$2399	1.3Gig	19ms	Maxoptix	4MB	$2489

Includes formatting software, 1 disk, and cables. 230MB Fujitsu and 650MB HP models also in stock.

MEGAHAUS HARD DRIVES

1-800-786-1184
M-F 8-7 Sat 9-3 Central
Local (713)333-1910
Fax (713)333-3024
No International orders accepted.

CODE MW11

1110 NASA Rd. 1 #306
Houston, Texas 77058

Prices and specifications subject to change. Some exceptions may apply to low price guarantee. All trademarks are registered trademarks of their respective companies. Returns must be in new condition, and may be subject to restocking fee. Shipping is not refundable. Personal checks held for clearance.

Circle 245 on reader service card

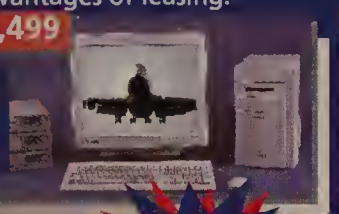
$0 Down Leasing from SuperMicro!

Get the system you need now—with zero down and low monthly payments! Call 800-352-3415 and find out all the advantages of leasing.

- 24-hour approvals with flexible lease terms
- 100% tax deductible monthly payments
- 20,000 items in stock, all available for leasing

PowerPC 8100 Super Station

$10,499



- PowerPC 8100/80 w/ 80Mhz PPC 601 CPU
- 72MB RAM, 540MB hard drive, extended keyboard
- Dual spin CD ROM drive
- SuperMac 20, 24-bit color monitor
- SuperMac Thunder 24, 1152 x 870 video card
- Image processing multifunctional drive: 650MB optical and SyQuest 88c in one enclosure

Zero Down! $269 per month

PowerPC 7100 Value Station

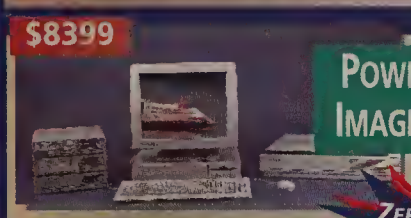
$8999

- PowerPC 7100/66 w/ 66Mhz PPC 601 CPU
- 72mb RAM, 540MB hard drive, extended keyboard
- Dual spin CD ROM drive
- SuperMac 17, 24-bit color monitor
- SuperMac Thunder 24, 1152 x 870 video card
- Image processing multifunctional drive: 650MB optical and SyQuest 88c in one enclosure

Zero Down! $239 per month

PowerPC 6100 Imaging Station

$8399

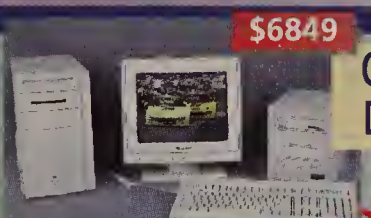


- PowerPC 6100/60 w/ 60Mhz PPC 601 CPU
- 40MB RAM, 540MB HD, extended keyboard
- SuperMac 20, 24-bit color monitor
- SuperMac Thunder 24, 1152 x 870 video card
- External SyQuest 200MB with cartridge
- Archive 2.0GB tape backup system
- TI Pro 600, 9 ppm, 600 dpi laser printer
- AVision 680AV, 6400 x 6400 dpi scanner w/PS LE

Zero Down! $219 per month

Quadra 800 DTP Station

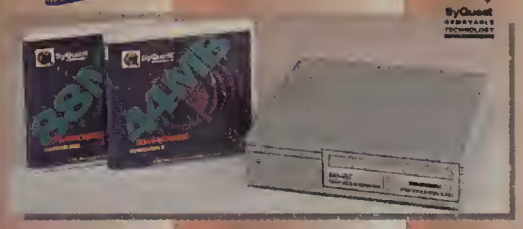
$6849



- Quadra 800 33MHZ, 68040 processor
- 16MB RAM, 540MB hard drive, extended keyboard
- 17" hi-res 24-bit color monitor
- SuperMac Thunder 24, 1152 x 870 video card
- SyQuest 88C read/write drive
- AVision 660AV, 4800 x 4800 dpi scanner w/PS LE
- TI Pro 600, 9 ppm, 600 dpi laser printer

Zero Down! $179 per month

SyQuest Drives



Model	Internal	External
SyQuest 270	$393	$433
SyQuest 200	$398	$429 SALE
SyQuest 105	$199	$239
SyQuest B8C	$269	$311
SyQuest 44	$149	$179

Includes external drive, 25/50 SCSI cable, Mac SW, terminator.

Cartridges	44MB cartridges only $49
270MB Cartridges (5+ or with drive purchase)	$65
200MB Cartridges (5+ or with drive purchase)	$7B
105MB Cartridges (5+ or with drive purchase)	$57
88MB Cartridges (5+ or with drive purchase)	$59/69
44M8 Cartridges (5+ or with drive purchase)	$49/59

Hard Drives

MICROPOLIS® 1.7GB only $895

Capacity	Description	Internal	External
1700MB	3.5" HH 9ms	$B95	$955 SALE

Quantum™ 540MB only $395

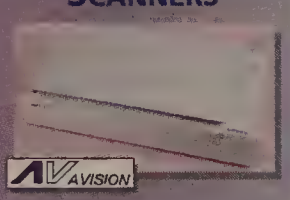
Capacity	Description	Internal	External
GO256MB	2.5" NB 17ms	$335	$435
42 MB	3.5" LP 1 7ms	$109	$169
85MB	3.5" LP 17ms	$130	$190
170MB	3.5" LP 17ms	$175	$235
240MB	3.5" LP 10ms	$185	$245
270MB	3.5" LP 10ms	$195	$255
340MB	3.5" LP 10ms	$225	$2B5
540M8	3.5" LP 10ms	$295	$355 SALE
1000MB	3.5" HH 10ms	$695	$755
1400MB	3.5" HH 9.5ms	$835	$B95
2100MB	3.5" HH 9.5ms	$1165	$1225

Seagate Hawk 1 only $1150

Capacity	Description	Internal	External
2100MB	B'cuda 2, Bms, 3.5"	$1385	$1445
4300MB	B'cuda 4, 8ms, 3.5"	$2475	$2535 SALE
1700MB	Hawk 1, 9ms, 3.5"	$1150	$1210 SALE
2100MB	Hawk 2, 9ms, 3.5"	$1275	$1335
4300MB	Hawk 4, 9ms, 3.5"	$2135	$2195
9100MB	Elite 9, llms, 5.25"	$3735	$3B35

Includes external drive, 25/50 SCSI cable, Mac SW & terminator.

Scanners



- B.5" x 14" scanning area
- 600 x 600 or B00 x B00 dpi
- 24-bit color, grayscale, halftone and line art mode
- Built-in gamma correction controls

AVision scanners meet the needs of publishers, design studios and ad agencies. AVision scanners are so accurate and dependable they are even used by Fujitsu and Pentax for re-sale under their own brand names.

Scanner	Price
AV600, 4800x4800 dpi w/ Adobe Photoshop LE	$579
AV600, 4800x4800 dpi w/ full Adobe Photoshop	$779
AV680, 6400x6400 dpi w/ Adobe Photoshop LE	$679
AV680, 6400x6400 dpi w/ full Adobe Photoshop	$879
AVision transparency adapter	**$299** SALE

Hilite Tape Drives

At only $679, the Archive 2.0GB tape drive is the most economical backup solution around. And if you need more speed, Hilite's line of WangDat drives provides it.

Model	Capacity	Speed	Price
Archive 2.0GB	**2.0GB**	**220KB p/s**	**$679** SALE
HI-WDAT2G	2.0GB	183KB p/s	$99B
HI-WDAT4G	4.0GB	524KB p/s	$109B
HI-WDATBG	8.0GB	732KB p/s	$1198
HI-W1200	1.2GB	285KB p/s	$799
HI-W9500	5.0GB	750KB p/s	$1329

Includes external drive, 25/50 SCSI cable, terminator and Macintosh software. Retrospect add $75.

Optical Drives

5.25" Optical Drives dsc 650MB $1199

Model	Capacity	Seek	MacKit
dsc-650	**594/650MB**	**40ms**	**$1199** SALE
Ricoh-9200 EX	594/650MB	35ms	$1849
MaxOptix-Tahiti II	594/1GB	25ms	$2299
MaxOptix-Tahiti III	650/1GB	25ms	$2799
Sony-650	594/650	19*ms	$1899
PMO-1.3GB	650/1.3GB	19*ms	$2799
Sony 1.3GB	650/1.3GB	25ms	$2299

3.5" Optical Drives Panasonic 128MB $689

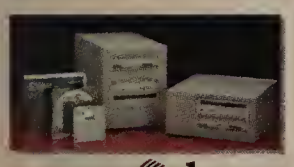
Model	Capacity	Seek	MacKit
Panasonic	128mb	35ms	$6B9
Fujitsu-230	230mb	30ms	$B99
Sony P-301	128mb	35ms	$999
Most-256	128/256mb	37ms	$895

Includes external drive, 25/50 SCSI cable, Mac SW & terminator.

5.25" Cartridges	Price
dsc / 3M 650MB	$79 /99
Sony 650/1.3GB	$119 /139
Komag 650 /1.0 /1.3GB	**$78 /94 /98** SALE

3.5" Cartridges	Price
dsc 128MB /Sony 128MB /Komag 230	$27 /45 /49

Multifunctional Drives



A multifunctional drive is a custom-made combination of hard drive, optical drive, CD-ROM, tape or Syquest drive mounted in the same enclosure. Multifunctional drives require less space, eliminate compatibility problems and cost less than separate components.

Multifunctional	Price
SyQuest 200 /540MB hard drive	**$759** SALE
SyQuest 88c /650MB optical drive	$2059
SyQuest B8c /NEC 3X CD ROM /540MB HD	**$1149** SALE
128MB optical drive /540MB hard drive	$979
NEC 3X CD-ROM /1.3GB optical drive	$2499
1.7GB Micropolis HD /8.0GB WangDat drive	$2149
4.0GB Seagate HD /Nikon CoolScan	$3029

Includes drive, 25/50 SCSI cable, terminator and Mac software.

Systems

SuperMicro has a complete line of Macintosh Quadra and PowerPC computers in stock. All system bundles are assembled and tested before shipping. Custom configurations are no extra charge.

CPU/XKeybrd/Mouse	Monitor/Card	Cash	Lease
8100 8/540/CD	SuperMac 17	$5239	$139
8100 24/1.0/CD	SuperMac 20/Thunder 24	$7599	$199
8100 40/1.7/CD	SuperMac 20/Thunder 24	$8199	$209
7100 8/540/CD	SuperMac 17	$4129	$109
7100 24/540/CD	SuperMac 20/Thunder 24	$6089	$164
6100 24/540	**14" hi-res monitor**	**$2939**	**$79** SALE
Q950 24/540	SuperMac 20/Thunder 24	$5939	$159
Q800 24/540/CD	SuperMac 17	$4129	$109
Q800 32/1.0/CD	SuperMac 20/Thunder 24	$6199	$169
Q660AV 16/540	**14" hi-res monitor**	**$2269**	**$59** SALE

Purchase $400 or more and get the full bundled version of Adobe Photoshop 2.5 or Adobe Premiere for only $250

800-352-3415

LOW Prices — Knowledgeable Sales Staff

SuperMicro

We Specialize in Image Processing

385 Van Ness Ave. #110, Torrance, CA 90501

310-782-5760 International • 310-782-5974 Fax

Circle 126 on reader service card

HEWLETT PACKARD

Deskwriter 560C Printer

$569

Scanjet IIcx

$899

Magic

SyQues

44MB External Drive 189
88c MB External Drive 399
200 MB External Drive 499
270 MB External Drive 499
44/88 MB Cartridge 57/69
200 MB Cartridge 85
270 MB Cartridge 65

Global Village Communication

5 Year Warranty

Teleport Mercury 269
Teleport Gold 218
Powerport Mercury 312
Powerport Mercury PB500 ..319
One World Fax-1 line 749
One World Fax-2 line w/Ethernet..1505

UMAX

*Includes Photoshop

UC630 MacLE 588
1260 MacPro 1149
UC840 MacPro 935
New! PowerLook.....3165
Transparency Adapter.....439
Document Feeder.....399

WACOM

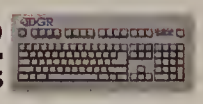
Free Wayzata CD with any purchase.

New! ArtPad 4 x 5 169
ArtZ.....279
ArtZ with Painter 3.0 479
UD1212RM.....499
Four Button Cursor 115
UD1218RM Transpar. Surface ..675

Precision Media

Precision 128 MB M-O Cart* 24
Precision 230 MB M-O Cart* 44
Precision 600/650 MB M-O Cart* ...79
Precision 1.3 GB M-O Cart* 95
** Lifetime warranty and free data recovery*

DGR Technologies



DGR Extended Keyboard.....79

28.8 Fast Class $169.00

Manufactured by Hayes

Magic Fax Modems
Magic 28.8 V. Fast Class 169
Magic 14.4 Data/FaxModem ..99
14.4 With Voice Mail 149
High Speed Modem Cable 15

Magic Powerbook Int. Modems
24/96 Data/FaxModem 79

**OCR Software Available*

All FaxModems come with full feature fax and data software, America Online and Compuserve Startup Kit.

Supra Corporation

14.4 Mac Package 195
14.4 LC.....134
14.4 Powerbook 210
28.8 Mac Package 249

Scanners

Apple
Apple Color One Scanner 879

Microtek
Scanmaker IIhr.....1079
Scanmaker IIsp 745
Scanmaker IIxe 899
35T Slide Scanner.....979

Agfa
Studio Scan 989
Studio Scan II 995
Arcus Plus 2525
Arcus Plus II.....2999

Laser Printers and Ink Refills

Nikon
Coolscan ext.....1899

Apple
Laserwriter 360 1415

Hewlett Packard
Deskwriter 320 299
Deskwriter 520 325
Laserjet 4ML w/toner 1029
Laserjet 4MP w/toner.....1395

GCC
Select Press 600 3750
Select Press 600 Pro 4800
Select Press 1200 5999
WideWriter 360 1449

Serving You Since 1985

Texas Instruments
MicroLaser Pro PS23.....1199
MicroLaser Pro PS65.....1525
MicroWriter PS23 620
Toner PS65/23 159

JetInc
JetInc is the most economical way to refill your jetink printers. It provides over 50% savings.
2Pk Black/Color 15.99/9.99
2Pk High Capacity Black ..19.99
500c/550c/560c/310 8Pk...55.95
AppleColorPrinter 2Pk Black....22.95
Cyan/Yellow/Magenta.....29.95

Monitors

NEC
Multisync 3V 15" 499
Multisync 2V 14" 355
Multisync 3FGE 15".....579
Multisync 4FGE 15".....689
Multisync 5FGE 17".....999
Multisync 5FGP 17".....1089
Multisync 6FGP 21".....1999
Multisync 3PG 27" Data ...2299

Radius
IntelliColor 20e 1878
Precision Color 17" 959
Precision 21".....1999
Two Page Display 20gs.....789
Two Page Display 21gs.....959

Internet Access

Sony
20" Multiscan GDM-2036s.....1929
15" Multiscan T 15SF1.....469
17" MS Trinitron GDM-17SE.....989

SuperMac
Pressview 21T.....3399
SuperMatch 17T.....999

Rasterops
ClearVue Color 20T Trinitron.....1899
20T Multiscan Color Enhanced ...2075
20T Multiscan 1999

Hard Drives

Olympus
Deltis 230 Optical 999
Deltis 1300 Optical 2799

PLI
270 Optical.....599

Micronet.....CALL

FWB
Jackhammer.....599
All others .....call

Accelerators/Video

Radius
Precision Color Pro 2X 1245
VideoVision Studio.....3349
24xp pro.....429

DiiMO
DiiMOCache 137

One hour Fax Response

Open 7 days-a-week M-F 8 am 10 pm (Central Standard Time) Sat 9 am 4 pm Sun 12 pm 4 pm

DISCOVER VISA DHL AIRBORNE EXPRESS

TO ORDER FROM BOTTOM LINE: Call 1-800-990-5688. Payment: Visa, Mastercard, Discover & American Express. No surcharge on credit card orders. Tax: Texas residents add 8% sales tax. Prices: Items and prices subject to change and availability. Terms: Net 30 available. Shipping: minimum $5-UPS Ground, Blue, Red, & Airborne. Returns: All returns must be in original condition and packaging and require an RMA number. Seal must not be opened on software. Returns may be subject to a restocking fee. Original shipping is non-refundable. Direct mail to: Bottom Line Distribution 4544 S. Lamar Blvd. Austin, TX. 78745

1-800-990-5688
Ph. 512-892-4070 Fax. 512-892-4455
On the Internet: sales@max.dgr.com

International Orders: Bottom Line provides the extra level of support international clients require: 24-hour international fax line, 220-volt versions of most hardware, discount rates and customs brokerage available via DHL. 2-3 DAY DELIVERY available to most countries. Bottom Line Distribution cannot be responsible for errors in typography or photography. All brands and product names are trade marks of their respective holders.

radius

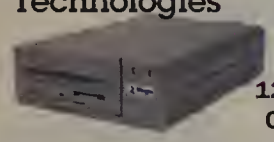
Lemans GT
$1499

Precision Color Pro 24x
$1099

Magazine CD from Op... sources with any purchase

Ask us about Radius money back guarantee

DGR Technologies



128 Magneto - Optical Drives

128 MB 799
230 MB 875
1.3 GB.....2399
Internal PC Card 119
PCParallel to SCSIAdapter ...199

Apple

Ask about our Leasing Program!

PowerPC 6100 as low as 1659
PowerPC 7100 as low as 2599
PowerPC 8100 as low as 3859
Blackbird 540c 4/320.....4520
Quadra 630 4/250.....1240
Quadra 630 4/250 w/CD 1599
New! Powerbook 150 1415

Custom configurations available.

Memory

1MB 30pin 120ns 25
2MB 30pin 80ns 80
4MB 30pin 80ns 139
4MB 72pin 60/70/80ns ...from 144
8MB 72pin 60/70/80ns ...from 285
16MB 72pin 515
32/64MB 72pin 60ns...1050/2795
Powerbook RAM .....Call
LC/Quadra VRAM 29/19

**Lifetime warranty!*

Magic

Hard Working Products For Your Macintosh Since 1985

From MacProducts

Magic Hard Drives

LPS Drives	*Internal*	*External*
Q170 Raw	185	238
Q340 Raw	277	328
Q540 Raw	315	385
Empire Drives	*Internal*	*External*
Q1080 Empire	680	740
Q540 Empire	555	620
Q1440 Empire	930	990
Q2160 Empire	1280	2250
IBM Drives "MR"	*Internal*	*External*
Alleycat 2GB	1149	1199
Spitfire 1GB	659	759

Call us about custom configurations

Magic Backup

2GB Compressed 699
2GB.....799
4GB Compressed 899

Magic RAIDs

Utilize the advanced SCSI features of your PowerPC to the fullest with the Magic 1GB RAID Upgrade, the ideal solution for desktop video on the PowerPC. This system is compatible with SCSI 1,2 and SCSI Manager 4.3. RAID upgrades come with drive, software and cables.

	8100 Upgrade	*External*
1.0GB RAID	749	1570
2.0GB RAID	1495	1899
4.0GB RAID		2899
18.GB RAID		9495
Software		190/365

Magic Optical Drives

128 Optical Drive 739
230 Optical Drive 825
1.3GB Optical Drive 2299
1.3GB Optical Drive Turbo.....2399

DiiMOCache w/FPU 210
DiiMOCache 50MHZ 439
DiiMOCache 50MHZ w/FPU.....518

SuperMac

Thunder IIGX 1600 3399
Thunder II 1360 2299
Thunder IIGX 1152 2200

Daystar

PowerPro 80MHZ 60/Acc..1995
Turbo 040 40MHZ w/Cache949

Keyboards/Accessories

Apple Extended Keyboard....158
DGR Extended Keyboard 79
Kensington Turbo Mouse 99
MicroSpeed Keyboard Deluxe 89
Powercase II for Powerbook 79

Software

Utilities Software

Adobe Super ATM 99
Adobe Type Reunion 42
Auto Doubler 2.0.....56
Central Point Mac Tools 3.0.....86.95
Disk Doubler 4.0.....55
Disk Lock 3.0.....72
DOS Mounter 4.0 49
Fast Back Plus 3.0 99
Folder Bolt 1.02 69
Fileguard 2.7.....175
Fontographer 4.0.....259
FWB HDT Toolkit.....129
Mac Link Plus Translators 7.0....115
Mac Tools 3.0 PPC 95
Norton Essentials PB 1.0 85
Now Utilities 4.0.2 77
Quick Keys 3.0.1.....105
Retrospect 139
Stuffit Deluxe 3.0.....64
Virex 5.0.....59

Graphics/Word Processing

4th. Dimension 3.1 559
Adobe Illustrator 5.5.....369
Adobe Photoshop 3.0 559
Adobe Premiere 4.0.....535
Aldus Freehand 4.0 369
Aldus Pagemaker 5.0 449
Aldus Persuasion 3.0 322
Canvas 269
Claris Works 2.1 97
DeltaGraph Pro 3.0.....142.35
Fractal Painter 3.0.....499
Fractal 2X 75
Kais Powertools 2.0 115
MS Works 3.0 159
QuarkXpress 549
Word Perfect 3.0 326

Business Software

Calendar Creator 35
Datebook Pro 2.0 45
Filemaker Pro 2.1 235
Foxbase 2.01.....319
MS Mail 3.1.....249
MS Office 4.2 497
MS Project 3.0.....429
Now Up to Date 2.0.....60
Power Point 4.0.....322

Communications Software

Delrina Fax Pro.....73
Fax STF.....45
Microphone 5.0.....135

CDROMs

7th Guest 51
Flying Nightmares Power PC ..55
Hilarious 25
Iron Helix 59
Journey to the Yangtzee 37
The Journeyman Project
NFL Magazine 25
Myst.....51
PGA Tour Golf II 60
Wayzata Assorted.....19

Powerbook Upgrades

Real upgrades for your powerbook for a fraction of the cost of purchasing a new one!

140 to 170.....329
160 to 180.....399
145 to 170.....129
140 to 180.....399
520 to 540.....549

Over 18,000 Products

Saturday Shipping

No Surcharge on Credit Cards

BOTTOM LINE
DISTRIBUTION

1-800-990-5688

At Bottom Line We Speak Your Language
Call Our International Sales Department
(512)892-4070 Fax (512)892-4455
Español • Français
Japanese • Deutsch

Circle 63 on reader service card

If you bought a Fujitsu we apologize...

MacProducts USA sets the new removable standard with the Magic 230 Magneto-Optical.

Reads and Writes 128 Mb optical disks at full speed unlike Syquest removable drives

$849

230 Mb Cartridges **$44**

4200 RPM Rotation Speed
1.7Mb / Sec Transfer Rate
29 ms Access Time
40 Watt Auto-switching Power Supply
2 Year Warranty

19¢ PER MEG

High Performance SCSI Products from Magic

RamDrive

Less than .2 ms access time with storage sizes up to 1.5Mb
768Mb Capacity $399
1.5Gb Capacity $599

Active Terminator

Allows you to use high speed SCSI-2 devices at their maximum performance.
Internal $39
External $49

SCSICache

Make your Optical or Syquest up to 5 times faster!
Drive Cache only.....$399
230 MO Drive w/Cache $1149
270 SyQuest w/Cache... $749

Railgun Pro II LC

Up to 64 mb of ram Super Fast 24 bit video up to 21" and a 50 Mhz 68030 with FPU

16" 24 bit Video $899
21" 24 bit Video.....$999
Accelerator only $399

SCSI Bus Extension

Each one allows 7 additional SCSI devices for a maximum of 49 drives per SCSI bus.

SCSI Extender.....$299

AV Raider

Hardware controlled RAID system at an affordable price. Much faster than software Raid Systems.
AV Raider.....$599

Power Mac Accelerator

Take your Power Mac to the limit with our easily installed accelerators.

80Mhz 6100 .....$89
80Mhz 7100 .....$89
100Mhz 8100 .....$99

1-800-347-1934

Ph. 512-892-4070 Fax. 512-892-4455

Internet: sales@max.dgr.com

BOTTOM LINE DISTRIBUTION

Circle 65 on reader service card

ProDirect

Call 800-524-9952

- MOST ORDERS SHIPPED SAME DAY.
- NO SURCHARGE ON CREDIT CARDS.
- NO OUT OF STATE SALES TAX COLLECTED
- 30 DAY MONEY BACK GUARANTEE ON ALL DRIVE PRODUCTS.

Fall Special

Quantum 700 MB Pro Drive.....Only $385
Micropolis 1.2 GB.....Only $599
Seagate 2.4 GB Barracuda II.....Only $1335

All ProDirect drives come formatted with the latest SCSI Manager 4.3 savvy driver for all of your PowerMac & AV needs. Always call for the most competitive pricing on all ProDirect drives.

Quantum — Best Byte for MACs

LPS Series

CAPACITY	Access	RPM	Cache	Int	Ext
170 MB	11 ms	4500	128K	$170	$230
270 MB	11 ms	4500	128K	195	260
340 MB	11 ms	3600	128K	235	295
540 MB	12 ms	4500	128K	290	350

LPS drives come with a 2 year factory warranty and are SCSI 1 & 2 compatible. All drives are tested and formatted with the latest SCSI manager 4.3 compatible software which is 100% PowerMac Compatible. LPS series drives have a 2 year warranty. External drives come complete with external termination and your choice of a double shielded 25/50 system cable or 50/50 daisy chain cable.

GO Power Book Drives

Capacity	Seek	Int.	Ext.
80 MB	17ms	$185	$255
256 MB	17ms	335	415

Empire and Pro Series

Capacity	Seek	RPM	Disc Cache	Int	Ext
540 MB	9.5 ms	5400	512K	$525	$585
700 MB	10 ms	4500	512K	385	445
1080 MB	10ms	5400	512K	640	700
1440 MB	9.5 ms	5400	512K	825	885
1800 MB	10 ms	4500	512K	995	1055
2100 MB	9.5 ms	5400	512K	1135	1195

Pro & Empire drives have a 5 year factory warranty and are SCSI 1 & 2 compatible.

Seagate

Capacity	Model	Size	Access	RPM	Disc Cache	Int	Ext
1.2 GB	ST31200N	3.5"	10ms	5400	256K	$660	$710
1.9 GB	ST12400N	3.5"	9ms	5400	1024K	1265	1310
New Price! 2.4 GB	Barracuda 2	3.5"	8ms	7200	1024K	1335	1395
4.2 GB	Barracuda 4	3.5"	8ms	7200	1024K	Call	Call
3.4 GB Elite 3	ST 43400N	5.25"	10ms	5400	512K	2045	2145
9 GB Elite 9	ST 410800N	5.25"	11ms	5400	512K	Call	Call

All Seagate drives listed a have a 5 year factory warranty. External drives come with your choice of a double shielded system cable or a daisy chain 50/50 cable as well as external termination. All drives come formatted and tested for a true plug and play solution. Please call our technical sales consultant for additional specifications, compatibility questions or a written quote.

MICROPOLIS

Capacity	Size	Model	Access	RPM	Cache	Int.	Ext.
1.2 GB	3.5" Low Profile	M4110	8 MS	5400	512K	$640	$700
1.2 GB	3.5"	M2210	10 MS	5400	512K	640	700
1.7 GB	3.5"	M2217	10 MS	5400	512K	895	955
2.4 GB	5.25"	M1926	11 MS	5400	256K	1340	1460
3.6 GB	5.25"	M1936	11 MS	5400	256K	1990	2110
Direct to Disk Recording AV Drives							
1.2 GB	3.5" Low Profile	M4110AV	10 MS	5400	512K	690	750
1.7 GB	3.5"	M2217AV	10 MS	5400	512K	945	1005
3.6 GB	5.25"	M1936AV	11MS	5400	512K	2060	2180

All drives come formatted and packaged with the latest SCSI Manager 4.3 compatible driver software. External drives come complete with your choice of a doubled shielded system cable or a 50/50 daisy chain cable and external termination.

- Transfers up to 10mb/sec.
- Fast SCSI-1 & 2 Compatible
- 5 Year (HOT SWAP) Warranty
- 300,000 Hours MTBF
- COMES WITH SCSI Manager 4.3 Compatible Driver.

SyQuest

CCapacity	Model	Seek	RPM	Buffer	Int	Ext
44MB	SQ555	20ms	3200	8K	195	225
88 MB	SQ5110C	20ms	3200	32K	325	365
105 MB	SQ3105	14.5ms	3600	64K	255	295
200 MB	SQ5200	18 ms	3200	64K	445	485
270 MB	SQ3270	13.5ms	3200	128K	455	495

One FREE Cartridge Included with all SyQuest Products!

Removable Media		Price
44 MB	SQ400	$58
88 MB	SQ800	68
105 MB	SQ310	57
200MB	SQ2000	80
270MB	SQ327	65

All SyQuest cartridges have a 5 year warranty. SyQuest Drives have a 2 year warranty. Cartridges offers a 30 day money back guarantee. All drives include a FREE copy of Disk Manager Mac Formatting Software.

FUJITSU

Capacity	Model	Size	Access	RPM	Disc Buffer	Int	Ext
240MB	M2637	2.5	14ms	4500	256K	$310	$370
520 MB	M2624 F/A	3.5	9ms	4500	512K	Call	Call
1.2 GB	M2694ESA	3.5	8.5 ms	5400	512K	$650	$710

DynaMO128 — 230 MB, 30 ms, 3600 RPM, SCSI-2 — $965

Memory Products

Memory		Centris, LCIII & Quadra	
2x8x80	Call	4 MB -70 ns/ 4 MB 60 ns	Call
4x8x80	Call	8 MB -70 ns/ 8 MB 60ns	Call
4x8x80(FX)	Call	16 MB 70 ns	Call
16x8x80(Low Profile)	Call	32 MB -60 ns	Call
16x8x80 (FX)	Call	VRAM	
All memory has a lifetime warranty!		Video RAM 256K/512K	Call

HEWLETT PACKARD

Capacity	Model	Access	RPM	Warranty	Int.	Ext.
1.2 GB	C2247	9.5 ms	5400	5 Year	$740	$799
New Price! 2.4 GB	C2490	8.5 ms	6400	5 Year	1295	1355
2.35 GB	C3010	11 ms	5400	5 Year	1975	2075
Optical Drives						
1.3 GB MO	C1716T	23.5ms	2400	1 Year	2350	2395

TAPE BACKUP DRIVES

Capacity	Model	Media	Int.	Ext.
2.0 GB	HP35470A	4mm	$935	$985
3-5 GB	HP35480A	4mm	1105	1150
4-10 GB	HP1533A	4mm	1315	1365
20-50 GB	HP1553A & Auto Tape Loader		3495	3595
2-5 GB	Exabyte 8205	8mm	1485	1535
5-10 GB	Exabyte 8505	8mm	2175	2275
20-50 GB	Exabyte 10i Auto Tape Loader		CALL!	CALL!

Cartridges tape backup systems include Retrospect backup software. Drives come with 1 piece of media.

QMS PRINTERS

Model	Price
PS 410 4PPM,300DPI	$1399
2 MB, Hat Parts, PS L1 & HP-PCL, 45 Fants	
***PS 860 8PPM, 600 DPI, 11x17**	$3825
12 MB exp. 32 MB,39 Fonts, PS L 1& 2, RISC Processor	
***PS 1725 17PPM, 600 DPI, New Price !**	$4399
8 MB Exp. to 32 MB, PS Level 1 & 2, RISC Processar	

*Network interfaces available for Ethernet/Talk,Token Ring for Netware,TCP/IP, DECnet, Emulation for DEC LN03, CCITT Group IV.

EXTERNAL CABINETS

ZERO FOOTPRINT — $75
40 watt shielded power supply, 110/220 VAC. Works with all 3.5" and 5.25" HH Drives.

MICROCAB Vertical Standing — $89
110/220 VAC. Works with any 3.5" Drive.

FULL HEIGHT — $139
68 watt shielded power supply, 110/220 VAC. Works with all 5.25" Drives.

Multi Bay Cabinet — $CALL
Two, Four, Six, and Eight Bay Cabinets available. CALL FOR QUOTE. All cabinets come with a 25-50 pin Mac system cable. One year warranty on all cabinets.

800-524-9952
Fax 24 Hrs. a Day 612-941-1109
Fax International Orders 612-929-2421 • Call: 612-941-1805
Business Hours: 8:00am to 7:00pm M-F (CST.)

- Dealer Inquiries Welcomed
- Volume Discounts Available
- P.O.'s Welcomed - Educational, Government, Corporate
- Please Specify For: Mac, HP Workstation, SUN Sparc or IBM RS6000

ProDirect
6824 Washington Ave. S.
Minneapolis, MN 55344

VISA MasterCard

Prices & Specifications subject to change. All trademarks are registered trademarks of their respective companies. Freight not refundable. All returns may be subject to a restocking fee.

Circle 135 on reader service card

MAC BARGAIN$™

DI$COUNT PRICE$ ON QUALITY HARDWARE, $OFTWARE & ACCE$$ORIE$

Buy with Confidence from MAC BARGAIN$.

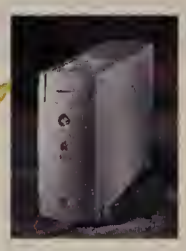
- A leading direct marketer of Mac products
- Over 2,500 products in stock
- Most orders ship the next day
- Our goal is 100% customer satisfaction

Great Deals!

NEW! from Apple

Only $399

Apple External Hard Drive 230MB



- Front panel power-on switch and pilot LED
- Simple SCSI ID check or change under a front mounted pop-up panel
- Complete set of cables, operating software and terminator
- Cushioned foot pads protect the drive and your desk in a vertical or horizontal position
- Advanced 3-1/2" drive technology for fast data access

Apple Computer, Inc. #95347

Only $1,029

ScanMaker IIHR

- Scans up to 16.8 million colors at 600x1200 dpi resolution
- Features Dynamic Color Rendition™ technology color calibration/correction system
- FREE Adobe Photoshop 2.5 full version included!

Microtek #01120

Only $499

Wacom ArtZ/Fractal Design Painter 2.0 with FREE X2

- 6x8 ADB tablet
- Cordless, pressure sensitive stylus
- FREE Fractal Design PainterX2 while supplies last!

Wacom #06598

ACI US

02648	4th Dimension	$588.82
94303	4D First Comp Upgrade	$87.98

Adobe

04042	Photoshop 3.0	$544.98
06263	Dimensions 2.0	$124.98
99491	Illustrator V5.5	$371.88
05808	Adobe Illustrator 5.0-5.5 Upgrade	$89.98
95341	Photoshop 3.0 Upgrade	$144.98
04670	Premiere V4.0	$484.98
05702	Premiere v3.0 -4.0 Upgrade	$71.98
03971	Streamline V3.0	$124.98
06332	Super ATM	$92.98
03497	Type Manager V3.8	$37.98
03950	Adobe Type on Call	$61.98

Aladdin

98501	Aladdin StiCom	$61.36
05820	Aladdin Stuffit Space Saver	$30.66

Aldus

06711	DateBook Pro V4.0	$46.98
95314	Fetch V1.2 single user	$94.98
00333	FreeHand V4.0	$368.98
04121	Gallery Effects Vol. 1	$124.38
98047	HomePublisher v2.0	$46.98
05481	IntelliDraw V2.0	$94.98
04573	PageMaker V5.0	$538.98
00346	Persuasion V2.1	$309.38
04190	SuperPaint V3.5	$46.98
06712	TouchBase Pro V4.0	$46.98
94194	Date8ook & Touch8ase Pro 4.0 Comp Upgr	$46.98
98301	Alias Sketch 2.0	$505.68

Altsys

05036	EPS Exchange V2.0	$84.98
04537	Fontographer 4.0	$247.98
00349	Metamorphosis Pro	$84.66

Ares

99266	Font Chameleon V1.0	$171.98
00078	Fontmonger V1.5	$88.98
03552	Avery MacLabel Pro	$42.59

Braderbund

95461	Automap Atlas	$54.74
03970	Bannermania	$20.98
03513	Carmen Sandiego/Time	$28.95
99564	Carmen Sandiego/USA DLX	$38.47
05688	Carmen Sandiego/World DLX	$38.47
97732	Carmen Sandiego/World DLX CD-RDM	$52.47
02730	Might and Magic III	$34.84

Adobe Photoshop 3.0

#04042

ONLY! $538

Caere

05161	DmniPage Direct	$85.98
01005	DmniPage Pro V5.0	$465.98
99255	DmniScan	$292.98

Claris

18052	Claris Draw	$176.98
04140	MacProject Pro V1.5	$362.98
03478	FileMaker Pro V2.1	$238.98
99734	Impact V1.0	$134.98
99733	ClarisWorks V3	$178.98
05032	FileMaker Pro V2.1 Comp Upg	$99.98
99750	Power to Go v2.0	$43.98
06343	Brush Strokes	$43.98
06525	MacWrite Pro V1.5	$88.98
06304	Retrieve It!	$24.98
18051	Drganizer	$64.98

Connectix

06925	CDU Desktop Utilities	$54.40
04144	Maxima V2.0	$42.31
05646	PowerBook Utilities	$53.73
96785	RAM Doubler	$51.14
00213	CompuServe Membership Kit	$22.10

Corel

95331	Corel GALLERY	$32.09
Call	Corel Professional Photo CD's - Call	$18.98
06984	Corel SCSI	$64.98
00203	Cricket Graph III	$85.23

Dantz

06326	Diskfit Direct V1.0	$27.27
04722	Diskfit Pro V1.1	$69.43
04194	Retrospect w/ Remote 10pk	$244.98
02586	Retrospect V2.0	$135.98

Datawatch

06533	Citadel W/Shredder	$53.55
06535	ScreenLink V2.0 Twin pack	$53.55
06534	Superset Utilities	$84.98
02077	Virex V5.0.3	$59.16

Delrina

97921	Delrina Fax Pro for Mac 1.5	$79.41
04706	Far Side Daily Planner	$37.22
17271	Intermission Screen Saver	$25.11
97938	Opus & Bill Screen Saver	$27.66

Deneba

99538	Artworks V1.0	$97.98
00803	Canvas V3.5	$251.98

Electronic Arts

97701	Chuck Yeager's Air Combat	$34.98
00473	Golf PGA Tour II	$34.98
97712	Populous	$28.98
97703	Total Distortion CD	$73.86
97707	Victory at Sea	$42.00

Entertainment

02785	After Dark V2.0	$25.80
06519	The Disney Collection Screen Saver	$25.80
04053	More After Dark Vol 1	$21.27
05934	Star Trek Screen Saver	$27.50
95465	Comptons Movies CD	$25.31
03598	LucasArts Indiana Jones Last Crusade	$19.23
99583	Maxis A-Train w/Contruct Set	$26.14
98218	Maxis DoodleMation V1.0	$18.32
98221	Maxis El Fish	$32.98
00145	Maxis Robosport	$20.89
04721	Maxis SimAnt	$26.11
98222	Maxis SimCity 2000	$38.98
99216	Maxis SimCity Classic	$20.89
03800	Maxis SimEarth	$27.25
06848	Microprose Civilization	$42.61
97127	Paramount Jump Raven CD	$38.98
97146	Paramount Lunicus CD	$37.98
97144	Paramount Movie Select CD	$26.25
97145	Paramount Rock, Rap and Roll CD	$35.77
05518	Passport Music Time/Trax Bundle	$84.66
05264	Passport Trax	$215.91
06486	Psygnosis Lemmings	$32.14
99237	Psygnosis More Lemmings	$27.35
97197	Velocity Development Spectre VR	$32.81
94593	Velocity Development Spectre VR CD	$38.98
99236	Virgin 7th Guest CD	$47.93

Fractal Design

00665	Painter V3.0	$318.98
93967	Painter 3.0 Upgrade	$142.98

Frame Technology

03582	FrameMaker 4	$558.98
98039	FrameViewer 4	$47.98
96800	Farallon Timbuktu Pro	$130.78
99506	Gryphon Morph V2.0	$131.82

HSC Software

06668	HSC Kai's Power Tools V2.0	$108.90
95335	KTP 8ryce 1.0	$90.98
00897	IdeaFisher 2.0	$85.23
04949	In Control 3.0	$81.68

Inline

06015	Cogito V1.0	$30.98
97198	Deliverance	$25.55
97744	Firefall	$25.55
06060	Icon 7	$30.66
00638	INITpicker V3.0	$37.98

Insignia

03664	Access PC 3.0	$79.55
06786	RapidCD	$42.00
04541	Soft PC V3.0	$98.98
06715	Soft PC with Windows	$301.98
98471	SoftWindows	$273.98

Symantec Norton Utilities 3.0

#04890

ONLY! $93

Kent Marsh

99110	Cryptomatic V1.0	$53.30
00258	Folderbolt V1.02	$68.98
99121	Folderbolt/Nightwatch II Bundle	$118.98
02755	Duick Lock V2.1	$17.05

Lotus

00507	1-2-3 V1.1	$275.98
00518	1-2-3 V1.1 Comp Upg	$92.98
96010	Lotus Drganizer Scheduler	$93.98
00429	Mac Draft	$262.50

MacPlay

97125	Astro Chase	$32.98
99575	Battlechess Enhanced CD	$43.18
97122	Castles II	$32.98
97149	Peter Gabriel XPLDRA 1	$47.06
99574	Star Trek 25th Anniversary	$32.07
95426	Star Trek 25th Anniversary CD	$39.98

Macromedia

99524	Macromedia Action! Bundle CD	$268.98
00839	Macromedia Director V4.0	$820.98
06310	MacroModel	$620.61
05288	SoundEdit 8	$134.98
03619	Swivel 3D Professional	$277.98
06840	Mac P & L	$170.45
99023	ManagePro 2.0	$213.63

Microsoft Corporation

06184	Project v3.0 Upg	$120.98
04161	Project 3.0	$418.98
00227	Excel V5.0	$294.98
01220	PowerPoint V4.0	$294.98
04898	Word V6.0	$294.98
04545	Excel v5.0 Ver. Upg	$114.98
05750	Works V4.0	$78.98
00596	Word V5.1 Upg	$114.98
03233	Dffice V4.2	$452.98
99696	FoxPro V2.5	$84.98
04293	Flight Simulator V4.0	$37.98
99702	Cinemania 1994	$48.98
99042	MYD8 Accounting 4.0 w/Payroll	$99.98
98514	No Hands Common Ground V1.0	$85.51

Now Software

00580	Now Software Now Up-to-Date V2.1	$58.59
04191	Now Software Now Utilities V4.0.1	$76.98

Pixar

05668	Pixar Typestry 2.0	$178.98
99551	Pixar Dne Twenty Eight CD	$178.98
04736	DuarkXPress V3.3	$568.98
04230	Duicken 4.0	$39.98

Kai's Power Tools 2.1 & KPT Bryce Bundle

#95336

ONLY! $174

Ray Dream

05965	addDepth V1.0	$99.98
00441	Designer V3	$222.98
04150	JAG II	$85.23

Sierra On-line

94595	Freddy Pharkas	$22.98
04683	Hoyle II	$24.61
94597	Japanese Alive CD	$99.98
04675	Kings Duest V	$37.43
04681	Leisure Suit Larry 5	$21.36
94000	Police Duest 4	$38.98

SoftKey

95594	American Heritage Talking Dictionary CD/RDM	$29.51
00641	WriteNow 4.0	$40.90
03631	Calendar Creator	$36.90

Spectrum Holobyte

06394	Falcon MC	$42.98
06852	Iron Helix CD	$55.43

Specular International

99535	Collage	$237.98
00815	Infini-D 2.6	$473.98
95285	Logomotion	$101.98
95264	Texturescape	$132.98

Symantec

06231	ACT! V2.0	$156.98
95330	AutoDoubler V2.0 w/any purchase	$9.98
04413	DiskLock V3.0	$63.98
03481	MacTools V3.0	$74.98
04464	More V3.1	$246.98
04890	Norton Utilities V3.0	$93.98
02194	PYRD! V4.1	$24.98
06648	Safe and Sound	$29.98
00116	SAM AntiVirus V4.0	$61.98
04776	Suitcase V2.1	$49.98
06997	Norton DiskDoubler Pro 1.1	$64.98
06243	Software Ventures MicroPhone Pro	$131.98
06828	Sun Clock 4.0	$18.18

T/Maker

99503	ClickArt Incredible Image Pak Disk	$78.98
05980	ClickArt Artistry & Borders	$47.98
00481	WillMaker 5	$35.15

WordPerfect

96374	LetterPerfect V2.1	$34.98
03972	WordPerfect V3.0a	$280.98
99748	WordPerfect V3.0a Comp Upg	$84.98
05013	WordPerfect V3.0a Ver Upg	$68.98
96363	Works V1.2	$69.98
96375	Grammatic 5 v1.1	$34.98

Call MAC BARGAIN$ before you buy!

1-800-619-9091

Why get slower ground shipping?

Overnight Delivery Only $6.00 and up

Credit cards are not charged until the order is shipped. Most products ship the same day for overnight delivery. Orders over 10lbs charged actual freight. Call for international shipping rates. Packaging and handling up to $6 per order. Returns subject to a restocking fee. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand.

For the Best Deals Around!

1-800-619-9091

MONITORS

Optiquest

18513	4000TC 17' digital	$829.98

SONY

01156	Multiscan 15sf	$459.00
06909	GDM-17SE	$968.98
01157	Multiscan 20se	$1,931.82

radius

97894	Full Page Display-Grayscale	$524.98
97873	PrecisionColor 17" color	$999.98
97865	20GS 20' Monochrome	$795.98
97895	Precision Color 20v	$1,381.98
95548	Intellicolor 20e Display	$1,877.98
95516	Precision Color 21	$2,157.95

SUPERMAC

98850	SuperMatch 20TXL	$2,108.98
97899	SuperMatch 17XL	$948.98
95515	SuperMatch 21TXL	$2,244.59

NEC

13146	NEC MultiSync 2V 14'	$339.98
13147	NEC MultiSync 3V 15"	$466.98
99801	NEC MultiSync 3FGe 15"	$556.98
99800	NEC MultiSync 4FGe 15"	$616.98
99990	NEC MultiSync 5FGe 17"	$997.98
98146	NEC MultiSync 5FGp 17"	$1,096.98
98145	NEC MultiSync 6FGp 21"	$1,996.98

VIDEO/GRAPHICS BOARDS

radius

05893	PrecisionColor 8XJ 8-bit	$455.98
09171	PrecisionColor Pro 24XP	$444.98
98862	PrecisionColor Pro 24X	$1,386.98
97892	PrecisionColor Pro 24XK	$780.39
97893	Lemans GT	$1,849.00
09164	Photo Booster	$764.98
06716	VideoVision	$1,512.86
98863	VideoVision Studio	$3,399.98

SUPERMAC

05116	Spectrum 8 Series III	$380.98
05513	Spectrum 24 Series V	$809.98
07879	Spectrum Power •1152	$1,208.23
05913	Thunder 24 V2.0	$1,675.98
07898	Power DSP Upgrade	$517.32
07864	Thunder II Upgrade	$517.32
05543	Thunder II GX•1152	$2,244.59
05544	Thunder II GX Upgrade	$862.77
07857	Video Spigot II Tape	$749.77

ACCELERATORS

DAYSTAR

04634	Universal PowerCache 33MHz/FPU	$350.98
07260	33MHz Value 040i 128K Cache	$638.35
07262	33MHz Value 040 FPU 128K Cache	$896.98
07263	40MHz Value 040 FPU 128K Cache	$1056.98
05397	33Mhz Turbo 040i Univ. w/128K Cache	$638.35
05398	33MHz Univ Turbo 040 w/128K Cache	$890.98
05399	40MHz Univ Turbo 040 w/128K Cache	$995.45
08419	Quad 040 40MHz 68040 w/128K Cache	$946.98
07264	Image 040 Imaging Xels	$1,526.98
05350	PowerPro 601 66MHz Xel	$1,499.00
05351	PowerPro 601 80MHz Xel	$1,999.00
08804	Charger	$478.98
06482	Charger Plus	$638.35

radius

05250	Radius Rocket 33	$999.00
05541	Radius StageTwo Rocket	$1,612.50

NETWORKING

ASANTÉ

08800	Asante Lite Mac II & Performa 600 (TK/TN)	$114.89
08801	Asante Lite Mac II & Performa 600 (TK/10T)	$114.89
08802	Asante Lite LC family (TK/TN)	$114.89
08803	Asante Lite LC family (10T)	$101.84
00511	MC3N8 f/ Mac II Performa 600 (TN/TK/10T)	$197.07
03641	MC+IIE64 for Mac II Performa 600 (TK/TN)	$150.93
03642	MC+IIET64 for Mac II Performa 600 (TK/10T)	$150.93
03646	MC+30IET64 for IISI & SE/30 (TK/10T)	$150.93
03647	MC+30IE64 for IISI & SE 30 (TK/TN)	$150.93
03648	MC+SEE for SE (TK/TN)	$144.31
03649	MC+SEET for SE (TK/10T)	$144.31
04933	MC3IISI for IISI & SE 30 (TK/TN/10T)	$197.07
09950	MC+LCIII for LC,LCII,LCIII (TN/10T)	$177.30
09951	MCLCTNIII forLC,LCII,LCIII (TN)	$149.49
09952	MCLC10TIII for LC,LCII,LCIII (10T)	$150.93
06104	Asante Print (10T/TK)	$318.17
06842	Asante Print 8 (AUI/10T)	$380.40
06817	Mini EN/SC f/PowerBooks (10T)	$233.43
06818	Mini EN/SC f/PowerBook (10T/TN)	$302.52
06840	NetExtender Hub (AUI/10T)	$176.17
06841	NetExtender Hub FN (AAUI/10T)	$176.17
05499	Thin FriendlyNet Media Adapter	$65.25
05500	Thick FriendlyNet Media Adapter	$65.25
05501	10 Base-T FriendlyNet Adapter	$65.25
00348	10T HUB/12 w/10T/TK/TN Ports	$487.07
00404	10T HUB/8 w/8 10T/TN Ports	$231.24

Dayna

00806	DaynaPORT E/LC (TN) OP0400	$98.86
03547	DaynaPORT E/SE (TN/TK)DP0100	$136.36
04595	DaynaPORT E/II-T (10T/TK)DP0201	$98.86
04717	DaynaPORT E/30 (TN/TK)OP0510	$136.36
03400	DaynaPDRT E/SE-T SE (10T/TK) DP0101	$136.36
03401	DaynaPORT si/30T (10T/TK) DP0511	$136.36
03403	DaynaPDRT E/SE-3 SE (10T/TN/TK) DP0103	$154.55
03404	DaynaPORT E/LC-M (10T/TN) OP0403	$145.45
03405	DaynaPORT si/30-3 (10T/TK/TN) DP0513	$154.55
05728	DaynaPORT E/II-3 (10T/TK/TN) DP0202	$152.27
04718	DaynaPDRT E/II (TN/TK)OP0200	$106.82
00488	DaynaPDRT SCSI Link-3 DP0802	$277.27
05190	DaynaPDRT SCSI/Link 3 (10T/TK/TN)P8	$294.32
96825	Dayna Pocket SCSI Link T (10T)	$220.45
96826	Dayna Pocket SCSI Link M (10T/TN)	$272.73
05279	DaynaPDRT EasyNet-T (AAUI/10T)	$51.14
05280	DaynaPORT EasyNet (AAUI/TN)	$51.14
00003	EtherPrint (10T/TK)	$311.36
00321	EtherPrint Plus 2.0 (TN/TK)	$373.86
03546	EtherPrint 2.0 (TK/TN)	$311.36
06595	EtherPrint 3 (10T/TK/TN)	$343.18
06622	EtherPrint-3 Plus (10T/TK/TN)	$405.68
04911	DaynaSTAR MiniHub-8	$184.09
06617	Pathfinder Router	$794.32
04911	DaynaSTAR MiniHub-8	$184.09

Farallon

98408	EtherWave AUI Transceiver	$99.58
98409	EtherWave AAUI Transceiver	$99.58
98410	EtherWave Printer Adapter	$312.90
98411	EtherWave NuBus Card	$176.95
98412	EtherWave LC Card	$169.15
98414	EtherWave PB or Slot-less Mac Adapter	$292.86
98413	EtherWave PC ISA Card	$169.15
98848	EtherThin Transceiver (AAUI/TN)	$53.32
98849	EtherThin Transceiver (AUI/TN)	$62.78
03475	Ether10-T Transceiver (AUI/10T)	$65.48
04307	Ether10-T Transceiver (AAUI/10T)	$55.10
99050	EtherMac SCSI Adapter (TN) HOI-30	$277.41
99051	EtherMac SCSI Adapter (TN) DB25	$261.95
99052	EtherMac SCSI Adapter (10T) HDI-30	$277.41
03333	Ether10-T StarController	$1,035.72
05693	Ether10-T Starlet PN515-1	$261.95
00828	PhoneNET DIN 8 10PK PN310	$192.41
00832	PhoneNET DIN 8 PN308	$28.58
00955	PhoneNET DB-9 PN309	$28.58
04160	PhoneNET Connector 50pk PN350	$771.95
02779	PhoneNET Star Connector PN301	$13.90

Focus

94202	EtherLAN Transceiver/FN	$45.98
94203	EtherLAN Transceiver/FN-T	$45.98
94204	EtherLAN Print	$274.98

Focus Ethernet Boards – Call

COMMUNICATIONS/MODEMS

Global Village

99307	Global Village Teleport/Bronze II	$88.98
05686	PowerPort Bronze	$86.98
06267	TelePort Gold	$218.00
05684	PowerPort Gold	$228.98
98181	TelePort/Mercury for Desktop Macs	$272.98
98182	PowerPort/Mercury for PowerBook 1XX	$313.98
98183	PowerPort/Mercury for PowerBook Duo	$317.39
95206	One World Fax - 1 Line, Localtalk	$794.66
95208	One World Remote Acc - 1 Line, LocalTalk	$953.75
95207	One World Fax - 2 Line, Ethernet	$1,192.39
95209	One World Remote Acc - 2 Line, Ethernet	$1,510.57
96598	GlobalFax for One World 10-User Lic Pk	$198.07
96599	GlobalFax for One World 50-User Lic Pk	$794.66

Hayes

06545	ACCURA 24 Ext	$68.98
06543	ACCURA 144 + FAX144 Ext	$159.98

Supra

99308	Supra FaxModem 144LC Ext - Mac	$133.98
00413	Supra FaxModem V.32BIS (MC) w/Sft Cable	$182.98
96582	Supra FaxModem 288 Ext - Mac	$268.78
06865	Supra FaxModem 144PB Int - PowerBook	$203.98
96583	Supra FaxModem 288 Int - Mac PB	$301.13

STORAGE SYSTEMS

IOMEGA

95354	Iomega MacTransportable 90 (NO DISK)	$285.41
96810	Iomega MacTransportable 90 Pro	$333.14
96811	Iomega MacTransportable Multidisk 150	$476.98

PLI

04699	Infinity 3.5 Optical Drive (Fujitsu)	$1,071.59
95364	Infinity 200 Removable Drive	$653.41
06547	Infinity 88/R-W 44	$495.45
96821	Infinity MAX Optical 5.25 1.3GB	$3,397.73
97953	DAT 3.5 10 Gig Drive	$1,437.50
96823	Infinity 270 Turbo S	$573.86
99926	Infinity 105 Turbo S 105MB REM	$414.77

FWB

06271	CD-ROM Toolkit	$44.89
05476	Hard Disk Toolkit - Personal Ed	$44.89
00555	Hard Disk Toolkit	$120.89
99923	Hammer PE 170MB HD	$409.82
04891	Hammer PE 340MB HD	$549.98
94110	PocketHammer 530 FMF	$971.98
05422	PocketHammer 1000 FMF	$1,118.98
94108	PocketHammer 1600 FMF	$1,750.98
94109	PocketHammer 2100 FMF	$2,267.98
94120	HammerTape 525MB Ext	$914.98
94121	SCSI JackHammer	$597.98

Apple Hard Drives

95346	160MB External HD	$323.86
95347	230MB External HD	$399.98
95348	325MB External HD	$448.86
95339	1000MB External HD	$1,130.68

Internal HD

06733	Quantum 170MB	$211.36
97960	Quantum 270MB	$259.86
06941	Quantum 340MB	$319.32
01107	Quantum 540MB	$409.98
99929	Quantum 1.0GB	$849.95
06736	Quantum 1.4GB	$999.00
97991	Seagate 2.1GB Barracuda	$1,799.91

External HD

06728	Quantum 170MB	$278.41
97961	Quantum 270MB	$329.68
06942	Quantum 340MB	$379.23
01108	Quantum 540MB	$479.86
99927	Quantum 1.0GB	$914.77
06731	Quantum 1.4GB	$1,112.50
94065	Seagate 2.1 GB Barracuda	$1,999.00

Removable HD

06219	SyQuest 44MB	$198.27
06538	SyQuest 44/88MB	$319.55
99930	SyQuest 105MB	$329.64
01142	SyQuest 200MB	$448.86
97989	SyQuest 270MB	$487.50
01163	128MB Magneto Optical	$879.98

PowerBook HD

99174	127MB 2.5" Drive	$277.27
99175	210MB 2.5" Drive	$339.59
99176	340MB 2.5" Drive	$579.09

INPUT DEVICES & SCANNERS

MICROTEK

06251	ScanMaker II	$499.98
06945	ScanMaker IISP	$748.98
06252	ScanMaker IIXE	$875.00
01120	ScanMaker IIHR	$1,029.00
06903	35T Slide Scanner	$954.87
01122	ScanMaker III	$2,349.00
06821	Automatic Document Feeder	$362.98
13442	Transparent Media Adapter	$497.22

Colcomp

99380	DrawingSlate 6x9 Corded Pressure Stylus	$239.98
98251	DrawingSlate 12x12 Cordless Pressure Stylus	$370.98
95241	DrawingSlate 12x12 Cordless 48 Cursor	$239.98

Logitech

04258	MouseMan	$62.98
95612	TrackMan II	$69.98

Relisys

97971	Avec 2400LE	$588.98
01176	Reli 4816T w/Photoshop	$1,378.98
01170	Reli 9624T w/Photoshop	$1098.00

Wacom

03677	12x12 Std, Cordless Pressure Stylus	$655.98
00087	12x12 Electrostatic, Cordless Pressure Stylus	$1,070.98
13342	UP-201 Cordless Batteryless Pressure Sensitive Pen (UD Series)	$85.98

CD-ROM/MULTIMEDIA

NEC

97814	NEC MultiSpin 3Xe External	$464.98
97815	NEC MultiSpin 3Xi Internal	$431.96
97816	NEC MultiSpin 3Xp Classic Portable	$386.98
96658	NEC MultiSpin 3Xp Granite Portable	$386.98
97817	NEC MultiSpin 4X Pro	$899.98
01199	Performantz Mini 2X CD-ROM	$197.00
13166	Sony SRS-D2K w/Subwoofer	$139.00
02168	Yamaha M10 Shielded Speakers	$63.64
99384	Altec Lansing 50 Speakers	$66.82
05689	Altec Lansing ACS 300 Speakers	$233.86

PRINTERS

HEWLETT PACKARD

95517	HP DeskWriter 310	$319.98
95520	HP DeskWriter 520	$284.98
95522	HP DeskWriter 560C	$569.98

NEC

96746	NEC Silentwriter 640	$780.98
13111	NEC Silentwriter Model 1097	$1,409.00

Texas Instruments

06859	MicroWriter PS23	$677.98
14319	MicroLaser Pro 600 PS23	$1,349.00
14320	MicroLaser Pro 600 PS65	$1,599.00

POWER BACKUP

APC

94396	APS Personal Surge Arrest	$18.98
94395	APS Personal Surge Arrest w/phone	$29.98
07150	BackUps 250	$106.60
99364	BackUps 400	$164.60
11651	BackUps 600	$278.56

Tripp Lite

99790	Tripp Lite 8C 250 UPS	$96.17
06661	Tripp Lite 8C 400 UPS	$160.93
04744	Tripp Lite 8C 500 UPS	$185.18

MEMORY UPGRADES

Mac Bargains carries memory upgrades
Please call for configurations and current prices

MEDIA

Bernoulli Cartridges

96824	Bernoulli 90MB Cart	$79.39
97289	Bernoulli 105MB Cart	$78.75
97291	Bernoulli 150MB Cart	$87.34

SyQuest Cartridges

02183	SyQuest 44MB Cart Unfo	$57.07
00183	SyQuest 88MB Cart Unfo	$90.91
99922	SyQuest 105MB Cart Unfo	$52.27
00278	SyQuest 200MB Cart Unfo	$87.30
97992	SyQuest 270MB Cart Unfo	$61.36

Volume Discounts Available

Only $218

Teleport Gold External Fax/Modem

- V.42 error correction/data compression
- 14,400 bps data speed
- Ideal for use with AppleTalk Remote Access
- Includes Global Fax OCR software

Global Village #06267

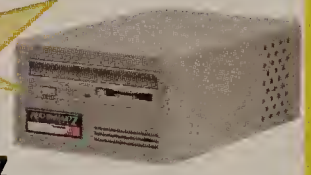
Only $459

Multiscan 15sf

NEW! PRODUCT

- 15" monitor with .25mm dot pitch and five preset resolutions
- 1280x1024 at 60Hz maximum resolution
- Meets all monitor safety standards worldwide
- Energy Star and VESA compliant
- Two user-adjustable temperature presets for more accurate whites

Sony #01156



Only $472

Performantz 270MB 3.5" SyQuest Drive

- 270MB of storage on a single 3.5" cartridge
- 13.5ms access time
- Reads and writes 105MB SyQuest cartridges

Performantz #97989

WHY PAY MORE...

when you can get a better price from MAC BARGAIN$?

Call Now!

DISCOUNT PRICES ON QUALITY HARDWARE, SOFTWARE & ACCESSORIES

IF YOU DON'T SEE IT... CALL!

MAC BARGAIN$™

FAX: 1-206-603-2520

15815 S.E. 37th Street, Bellevue, WA 98006-1800

©1994 MZI, Inc. Bellevue, WA ™Trademarks of all companies listed in this ad. All rights reserved.

Knowledgeable Sales Advisors help make buying easy!

Please mention this source code when ordering **MUB11**

Circle 70 on reader service card

NEW AND DEMO SPECIALS!

CRA SYSTEMS

1(800)375-9000

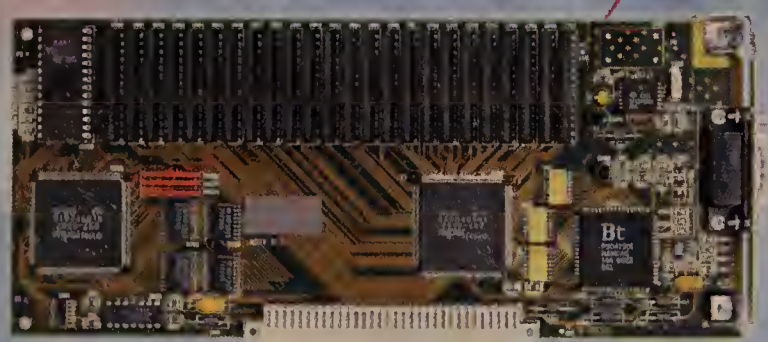
800.375.9000

$399
Radius Color Pivot LE
WITH PURCHASE OF CARD.
We have cards for-
SE/30, LC, IIsi,
Nubus, Quadras.

DISPLAYS

Radius PrecisionColor Display 21	**$1849**
Radius PrecisionColor Display 20v	**$1299**
Radius Display 20 inch Trinitron	**from $1499**
• Runs off built-in video or dedicated video 1152 x 882	
PrecisionColor Display/19	**from $1199**
• Multiple resolution switching on-the-fly	
RasterOps 20 inch Color Display	**$1199**
Radius PrecisionColor Display/17	**CALL!**
Sony 17 inch Trinitron	**$899**
Sony 17" Trinitron w/24-bit video card	**$1198**
Radius 21 inch Grayscale Display	**$799**
Radius 20 inch Grayscale Display	**$699**

Radius LeMans GT	**$1799**
PhotoBooster (Up to 10X faster than 950)	**$499**
Radius PrecisionColor Pro 24x	**$1299**



PrecisionColor 24X **$799**
The Radius PrecisionColor 24X is the 'Best Price/Performance Value' *(MacUser)* 24-bit board on the market!
• $1000 plus savings vs. Thunder/24!

Radius Universal 24XP/24XK	**$299/599**
Radius 8XJ	**$399**
Radius Pivot Cards	**CALL**
SE/30, LCs, Mac II family, Centris & Quadra available	
Radius Two Page Display cards	**CALL**
Radius VideoVision	**from $1299**
Radius VideoVision Studio	**from $2999**

Radius PowerView **$199**
Allows most Powerbooks and the Classic II to support color, grayscale, monochrome displays and projectors.

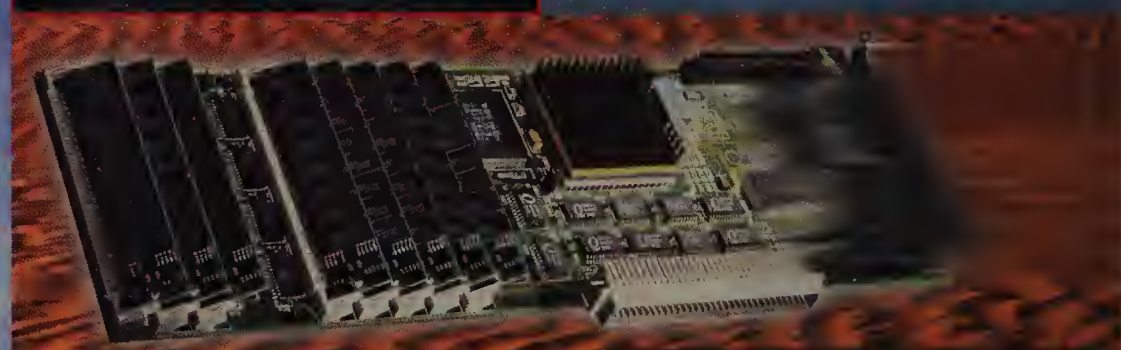
SuperMac SuperView **$299**
Similar to PowerView but also supports TV!

$699 $499 $399

Radius PrecisionColor Pivot **$699**
• Portrait and landscape orientations
• Color • Built-in video compatible

Radius Grayscale Pivot **$499**
• Portrait and landscape orientations
• Grayscale • Built-in video compatible

Radius Full Page Display **$399**
• 640x870 resolution •75 Hz refresh
• Grayscale
• Built-in video compatible



ROCKETS/ACCELERATORS

Radius Rocket 68040 **$399**

Radius Rocket 33mhz	$799
Radius Rocket 25	$599
Radius Rocket 25i	only $399
RocketShare	$299

•Multiprocessing on your Mac

33MHz or 40MHz Upgrade for Quadras
for the Quadra 950, 900, or 700 **$349**

80MHz Upgrade for Power Macintosh 6100/7100
Accelerate to PowerMac 8100 speed! **$299**

WE BUY MACS!!

Please fax list when possible. Corporate, Government, and University PO's welcome. Prices reflect cash discounts. Mastercard, Visa, AMEX, & Discover Card accepted. Lease/Purchase financing available. All returns require RMA number and are subject to a restocking fee. Refused orders subject to a 20% restocking fee.

Call for Mac Systems and Parts!

CPUs

Quadras	CALL
Powerbooks	CALL
PowerMacs	CALL

PARTS

All Apple parts new and used in stock. Advance exchange available.

Motherboards	CALL
Power supplies	CALL
CRTs	CALL

Over 20,000 items/parts in stock, if you don't see it- CALL US!

Consultants/Dealers 817.754.2131
International Sales 817.754.2120
TeleFax 817.754.2345

CRA Systems, Inc.
300 South 13th St.
Waco, TX 76701

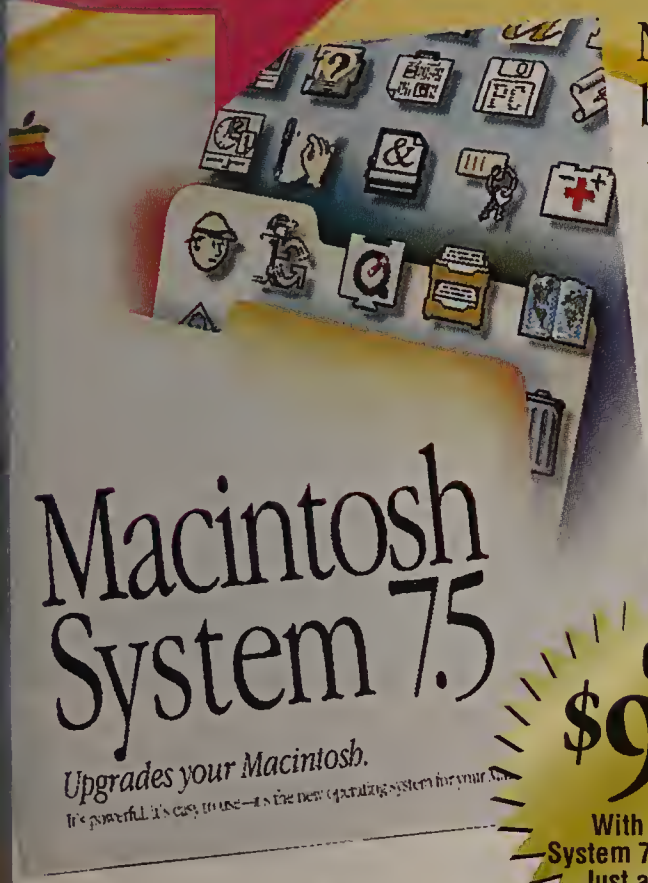
Circle 20 on reader service card

You have so many reasons to try The Mac Zone!

FREE TRAINING

The Mac Zone™ Established 1986

New! On System 7.5 from Apple®



New! Apple System 7.5 is here with breakthrough technology for the ultimate in Mac computing. Features over 50 enhancements, including:

- New productivity shortcuts
- Step-by-step assistance with the Apple Guide
- Cross-platform compatibility
- AppleScript for automating complex or routine tasks
- Universal Desktop Mailbox for managing all your communications

And much more!

Only $99.98
With FREE PTS System 7.5 Made Easy
Just ask for item #93350

For a Limited Time Only!

Peter Norton Presents System 7.5 Made Easy

Includes:
- Basics
- Beyond the basics

Training on CD-ROM.

FREE
PTS System 7.5 Tutorial with System 7.5 purchase – A $79.98 Value!

Over 2,500 products in stock
Including new versions and all the latest releases for your Mac. New products every month! Software, hardware, peripherals, accessories… everything you need to be more productive at work and enjoy your play more.

Shop 7 Days a Week, 24 Hours a Day
in the comfort of your own office or home.

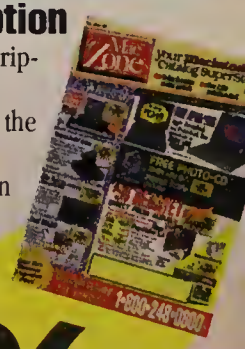
30- Day Money-Back Guarantee
on many of our products. If you're not completely satisfied, please contact us.

Lowest Catalog Prices or we give you FREE SHIPPING!
Any competitive catalog price comparison must include shipping charges.

Next Day Delivery only $3
no matter how much you order!

OVERNIGHT DELIVERY VIA AIRBORNE EXPRESS

FREE Catalog Subscription
Get a FREE One-Year Catalog Subscription. Stay up-to-date on the latest innovations and all the best buys in the industry. To get your FREE subscription, just fill out and mail in the coupon below.



Before you buy, call The Mac Zone

1-800-436-0606

For the best Macintosh products at better than Warehouse and Superstore prices.

Fax (206) 603-2500 • International (206) 603-2570 • CompuServe code: GO MZ

CORPORATE SALES 1-800-258-0882 | GOVERNMENT SALES 1-800-372-9663 | EDUCATION SALES 1-800-381-9663 | e-World Online

Trusted Name Internationally

Middle East – 971 4 359 800	Fax: 971 4 359 997	• Switzerland – 411 401 4070(71,72)	Fax: 411 401 4073
Indonesia – 62 21549 5180	Fax: 62 21530 4715	• Portugal – 351 1 387 4558	Fax: 351 1 386 3801
France – 33 14688 4040	Fax: 33 14790 6903	• Mexico – 525 611 4646	Fax: 525 563 5025
Germany – 49 40551 6066	Fax: 49 40 551 2151	• Hong Kong – 852 851 1750	Fax: 852 581 0359
United Kingdom – 44 483 211456	Fax: 44 483 211 567	• Japan – 81 3 5454 7226	Fax: 81 3 5454 7212

MW011 PLEASE USE THIS CODE TO RECEIVE THESE SPECIAL PRICES
Circle 71 on the reader service card

☐ YES! START MY FREE 1-YEAR CATALOG SUBSCRIPTION AS SOON AS POSSIBLE:
☐ MAC ZONE ☐ PC ZONE ☐ CORPORATE ZONE ☐ LEARNING ZONE

Name _____
Address _____ Apt _____
City _____ State _____
Zip _____

MW011

Mail to: The Mac Zone, 15815 SE 37th St., Bellevue, WA 98006-1800

©1994 Multiple Zones International, Inc. All rights reserved.

PRODUCT INDEX

Category	Page No.
ACCESSORIES	247
Covers	
Computer Mouse Pads	
Diskettes	
BUSINESS TOOLS	228-230
Bar Code	
Cataloging Software	
Credit Authorization	
Point of Sale	
Real Estate	
EDUCATIONAL & RECREATIONAL	247-248
Astrology	
Degree Program	
Discount Software	
Genealogy	
Grading	
Music	
Religion	
GRAPHICS	249-250
CAD/CAM	
CD ROM Photos	
Clip Art	
Fonts	
Graphics Translators	
Magazine	
MOBILE COMPUTING & PDA's	251
Battery Charger	
PowerBook Accessories	
MULTIMEDIA & CD-ROM	249
Presentation	
Quicktime Flipbook	
NETWORKING & COMMUNICATIONS	251
BBS	
PROGRAMMING & UTILITIES	251
Languages	
SERVICES & SUPPLIES	251-252
Computer Insurance	
Computer Repair	
Data Recovery	
Patent Research	
Prepress Services	
Slides	
SPECIALIZED MARKETS	251
Languages	
Medical	
SYSTEMS & PERIPHERALS	230-240
Hard Drives	
Switch Box	
Printers	
UPGRADES & MEMORY	241-246

ACCOUNT MANAGERS: 800.888.8622
- Carol Johnstone 415.978.3152
- Shannon Smith 415.974.7414
- Niki Stranz 415.978.3105

DTP COORDINATOR:
- Clayton Haberman 415.978.3132

Cash On Your Screen!

Credit Card Authorization & Electronic Deposit Software

MacAuthorize®
Single User version

- Automatically authorizes and deposits all credit card sales -- individually or in batches.
- Integrate with your sales system via AppleEvents, AppleScript & Import/Export.
- Instant totals, discount rates, reports, receipt printing, database options, etc.

NEW!

MacAuthorize® Hub
Multi-User Server version

- Turn your Macintosh network into a credit authorization network...with one modem!
- Save hundreds, if not thousands of dollars in terminal costs, phone lines, and time.

POS Credit Developers since 1981

800/483-5526 • 408/274-1110 • Tellan Software, Inc

CIRCLE 480 ON READER SERVICE CARD

AMERICAN EXPRESS
MasterCard
VISA
A MEMBER OF AIM USA

The Recognized Macintosh Bar Code Experts

UniScan-300 ADB Bar Code/Mag Stripe Reader $369
(Industry's only lifetime warranty)
Complete with wand & bar code printing software
Compatible with all Macs from 128K to current models.
Inventors of keyboard interface bar code reader for Macintosh.
PDCS-300 Portable System *(1 year warranty)* $999
Includes wand, communications software, cable, battery & AC adapter.
256K storage (128K RAM & 128K Flash EPROM) upgradeable to 1 meg.
Data collection program included · Inexpensive program generator

30-Day Money-Back-Guarantee on All Products
Established 1978 · Newton Scanners and Software Available Now!
Discounts for Resellers, Schools, Non-Profit & Government Agencies

TPS Electronics
2495 Old Middlefield Way, Mtn. View CA 94043
(415) 988-0141 Fax (415) 988-0289
(800) 526-5920 AppleLink: BARCODE

CIRCLE 441 ON READER SERVICE CARD

KeyDisk TERMINATOR™

is a Macintosh software package that will give licensed software users the capability to run any original copy protected master key disk application **without using the key disk anymore!**

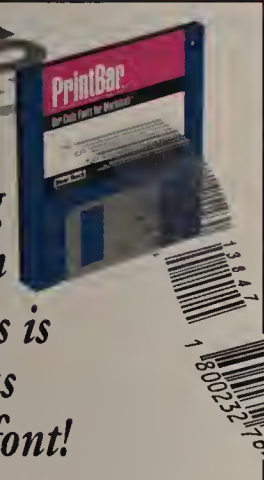
$99

Plus $6 Second Day Air—CA Add Sales Tax
COD/MC/VISA Orders Processed Same Day

Unlimited application copies and launches • Take favorite key disk applications on the road without worry • No more down time due to lost installs or authorizations • No more deinstalling or deauthorizing before optimizing hard drives • Applications run smoother • No more system install conflicts or crashes due to installs or authorizations • Replaces all installs or authorizations back onto original copy-protected master key disks for safe keeping • KDT does not alter any proprietary codes on original copy-protected master key disks. Regain your rights to make backup copies of your licensed software!

SYDNEY URSHAN MUSIC
TEL (800) 88-DWEEB
FAX: (818) 901-WEEB
AppleLink/AOL/PAN: URSHAN
Internet: urshan@netcom.com

CIRCLE 402 ON READER SERVICE CARD



Creating precision bar codes is as easy as using a font!

PRINTBAR™ BAR CODE FONTS

- Compatible with virtually any Macintosh application.
- Choose from: • UPC/EAN/ISBN • Code 39 • Interleaved 2 of 5 • POSTNET/FIM.
- 90-day money back guarantee.
- *"This is the best product of its kind, and it's reasonably priced too"* —MacUser review ★★★★½

Scanning bar codes is even easier!

CODESCAN 3000™ BAR CODE READER

- Comes complete with wand and 5 year warranty.
- Scans information directly into software application.
- Available with laser gun, CCD, badge slot, magstripe options.
- No software required. Ready to use in minutes!
- Money back guarantee.

Bear Rock TECHNOLOGIES

Bundle discounts available.

4140 Mother Lode Dr., Ste. 100, Shingle Springs, CA 95682
916 672-0244 · Facsimile 916 672-1103

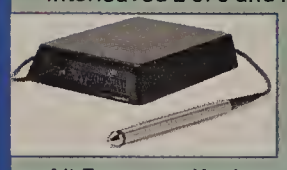
Call the Bar Code Experts
800 232-7625

Bar Code Headquarters

Bar Code Readers

for all Macintosh ADB or Serial

- Attaches thru ADB as 2nd Keybd
- UPC/EAN, Code 128, 2of5, Code 39, Interleaved 2 of 5 and more!

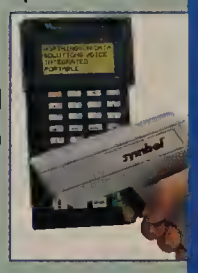


- Wand, Magstripe, CCD, Laser, Slot Badge
- All European Keyboards Supported
- **Top Rated by Independent Reviews**
- With Cordless Radio Wand – **$695**
- Complete with Steel Wand – **$329**

Portable Readers

for all Macintosh ADB or Serial

- 64K or 256K RAM. Keyboard or serial
- Wand, CCD or Laser Input
- UPC/EAN, 128, 2of5, MSI, Code 39, etc.
- **Voice messages tell operator what to do at specified errors and at data entry steps. Simple!**



- Complete 64K Unit with Wand & Voice – **$799**. 256K Unit – **$899**

Fonts for Film Masters

Call for Our Catalog

- 65 PostScript Type 1 Bar Code Fonts As easy to use as Times or Helvetica
- Use in any program with a font menu
- Code 39, UPC/EAN, Code 128, Interleaved 2of5, PostNet with FIMS
- Not HyperCard Dependent
- Simple, Easy-to-Use, Plug & Play!
- Generate film masters in Quark, etc.
- Comes with Sequencer™ DA
- **$199** includes our DA, and All Fonts

WORTHINGTON DATA SOLUTIONS

800-345-4220
or call 408-458-9938 • FAX 408-458-9964

Barcode Generation

MacBARCODA

With a color option that works

All the vital features for **high-quality** bar code production. Compatible with all major page-makeup and graphics software. The highest precision barcoding package available for the Mac.

Bar Code Readers

For Mac or PC. Connects between keyboard and computer. Works with any software package. All major bar codes supported.
Wand Reader **$ 255**

Label Printing on Sheets

Version 2.0 of the easy to use PostScript label printing package. Any label size and sheet layout with bar codes, text, graphics, sequential numbering and mail merge.

LabelDesigner

Label Printing on Reels

The easiest option for printing short-run multi-variation labels on reels with powerful text, graphics, and bar code facilities. Compatible with Zebra thermal printers

macthermal

Computalabel

Call Toll Free - **800-289-0993**
28 Green Street, Newbury MA 01951 Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD

VirtualDisk™

Completely Automatic Cataloging

Know where every file is on every disk you own without any effort on your part.

VirtualDisk automatically catalogs all disks and removable media as encountered. You don't even have to launch an application. Your catalog is always available in compact alias form on your desktop. You can search, view, or open any file on any off-line disk with simple **Finder commands**.

Along with an improved interface version 2.0 offers faster cataloging, more user controls, multiple catalogs and the ability to catalog inside popular archive formats and Retrospect™ back-up logs.

"...the best solution to your disk-cataloging woes." MW ★★★★ Macworld, July 94

New Version 2.0
Only $49.95

Power Macintosh™ Compatible

MacsPlace Referal Code: 1094
800-914-0009

CIRCLE 406 ON READER SERVICE CARD

SYNEX

BAR CODE PRO™

"Installs in 60 sec. and takes less than five minutes to master" — MacWorld!

Desk accessories, Quark™ or PageMaker™ add-ons, or fonts create bar code graphics in color. Bar Code Pro™ is an easy-to-use solution for packaging design, labeling, libraries, inventory, or publishing. Versions: UPC, 39, EAN, ISSN, ISBN, 128, POSTNET/FIM, Codabar, MSI, ITF, Pharmacode

NOW IN COLOR

0 012345 7

TEL: (800) 447-9639
FAX: (718) 768-3997

INTERNT'L CALL: (718) 499-6293

CIRCLE 450 ON READER SERVICE CARD

Take Control

The One That Apple® Uses

Complete Systems Start at
$2,799

Taking control of your business is easy with a system that has been designed and proven by thousands of retailers just like you. POS•IM provides full POS and Inventory Management functionality with the features you need at an outstanding price.

POS•IM
Point-of-Sale • Inventory Management

Ensign Systems, Inc.
(801) 546-1616

CIRCLE 417 ON READER SERVICE CARD

BUSINESS TOOLS

SYSTEMS & PERIPHERALS

Mac-Barcode® ProLabel

Version 2.0

Bar Code Support from the Experts!

Not a Font...A True Label Application!

The Best Macintosh® Bar Code Label Software Just Got Better! Design and Generate Bar Code Labels Using U.P.C., EAN, Bookland, and 7 More Symbologies Including UCC/EAN-128 (with Als). The New York Times Says "Mac- Barcode Is Both Easy to Use and Versatile."

Call for Product Literature & Demo Disk.

800-733-7592

The Mac-Barcode Co.
FAX 617-934-6233
P.O. Box 1814,
Duxbury, MA 02331

Ask About Our Scanners !

CIRCLE 562 ON READER SERVICE CARD

FAST MAIL ORDER Distribution POINT-OF-SALE SYSTEMS

POS/OE 4 MAC™

- •ORDER ENTRY
- •BARCODING
- •INVOICING
- •MULTI-USER
- •FAST CASH RETAIL
- •CREDIT CARD PROCESSING
- •PURCHASE ORDER
- •INVENTORY CONTROL
- •DEMO available

EES Companies Inc

800 - 508 - 4444

TEL 508.653.6911
FAX 508.650.1872

CIRCLE 600 ON READER SERVICE CARD

POINT OF SALE INVENTORY CONTROL

Software & Hardware for
- Retail
- Manufacturing
- Service Industry
- Govt., Education

New Bar Code Readers for the Newton
New Time Clock Software and Hardware
Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth.& Deposit Software

call or fax for a FREE CATALOG

(800) 622-7670

(618) 985-8237 TEL • (618) 985-3014 FAX

Dealer Inquiries Welcome
30 day MBG

P.O.S. → DIRECT

CIRCLE 466 ON READER SERVICE CARD

Mac Landlord $399

Upgraded version 2.2 now available. Still the Easiest-to-use property management program for multiple properties & unlimited units. Includes tenant and unit records, recurring income and expense, check writing, checkbook balancing, printing tenant notices, income and expense ledgers, and much more. Free telephone support. Demo for $25, credited to purchase.

Labana Management Company
P.O. Box 2037
Dearborn, MI 48123
313/562-6247

MICROSOFT OFFICE 3.0

(FREE upgrade to 4.0)

only: $350.00

PAGEMAKER 5.0

only: $469.00

PAGE COMPUTER

4665 MELROSE AVE
LOS ANGELES, CA 90029
TEL:(213)665-7777 FAX:(213)660-0444

VISA MasterCard AMERICAN EXPRESS

ORDER NOW (800) 886-0055

CIRCLE 422 ON READER SERVICE CARD

PowerMacs

6100 16/250/cd	2295
6100 av 8/250/cd	2295
6100 8/160	1595
6100 16/250/Win	2195
7100 40/1gb	4195
7100av 72/2gb/cd	6495
7100 16/250/Win	2899
8100 72/1gb	6495
8100 8/250/cd	3849
8100 16/500/Win	4595
8100 av16/500/cd	4975

Quadras

605 8/160	Call
610 16/250/CD	2199
610 8/160/DOS	1475
650 8/230/CD	Call
660AV 8/230/CD	Call
840 24/230/CD	Call
840 128/2GB/CD	Call
950 136/1.2GB	7795
950 256/2GB/CD	12995

Apple Printers

Stylewriter II	279
Stlyewriter Pro C	595
Port. Stylewriter	399
Laser Select 320	875
Laser Select 360	1435
Laser Pro 630	1895
Laser Select 810	4445

FAST MOVERS

605 4/160/Sftwr	995
605 8/250/Sftwr	1295
PB 520 8/160	Call
PB 520C 8/160	Call
PB 540 12/240/M	Call
PB 540C 8/320	Call
Duo 230 fd/dock	1495
Duo 280 12/240/M	Call
Duo 280c 4/320	Call

Apple Monitors

Color Plus 14"	299
14" Trinitron	379
14" AV Monitor	629
Apple 15" Color	Call
Multiplescan 17"	969
Multiplescan 20"	1899

Hewlett Packard

Deskwriter 310 sf	375
Deskwriter 520	299
Deskwriter 560C	569
Laser 4ML	969
Laser 4MP	1319
Laserjet 4MPlus	1869
Deskjet 1200C P/S	1899
Laser 4Si Mx	4079
Scanjet IIP	499
Scanjet IICx	925
Jet Direct Card	325
Call for all HP ACCSR	

Supermac

Platinum 21"	995
Supermatch 20 plus	1575
Supermatch 17T	999
Supermatch 20Txl	1945
Thunder IIGx 1600	Call
Supermatch 21TXL	2099

Radius

Prec.Color 15SF	499
Prec.Color 17"	1075
Prec.Color 20V	1599
Intellicolor 20E	1825
Prec.Color 21"	1995
Vidiovision	Call
Lemans GT 24bit	1799

Sony

GDM-17SE1	1025
GDM-2036S	1825
GDM-20SE1	Call
CPD-1730	975
1.3GB ext. MO Dr.	2175

RasterOps

Clearvuecolor 20T	1795
20T Multiscan	1899
Horizon 24 bit	2035
Moviepak 2 pro	3175
Clearvue 17"	895

NEC

3V / 3fge	499/599
4FGE	645
5fge/5fgp	1075/1099
6fgp 21"	1995
SW 640	745

NewGen

PS 440B 11*17	2975
Imager + 12	5495
PS 1200B	4145

Call for items not listed
Int'l Sales Welcome
Ask about corp. Leasing
Prices shown are for C.O.D
Add 2% for credit cards

Mac Storm

Call 310-829-9780

Free Inquiry by fax at

1-800-fax-9553

Local & Int'l Fax (310)315-1009

Prices subject to change w/o notice

CIRCLE 440 ON READER SERVICE CARD

MacUSA

Since 1983

800-809-0880

Voice: 818-704-9860
Fax: 818-346-1890

Quadra

630 4/250 ..... $1199	605 and 610 ..... Call
650 8/500CD $2525	950 8/0 ..... $2740

Power Mac

6100 8/160 ..... $1640	7100 8/250 ..... $2575
6100 8/250CD $2035	8100 8/250 ..... $3695

PowerBook

150/520 ..... Call	540/540C ..... Call

Printers

Hewlett Packard
4M Plus $1875
DW 560C $550
4ML $970

Monitors

Apple
14"/14"AV $375/620
17" ..... $475/$950
Color Plus $299

Scanners

H.P. IIcx $920
Apple Color 1 ..... $860

PRICES REFLECT CASH DISCOUNT AND ARE SUBJECT TO CHANGE.

We'll Beat Any Price!

Visa, MC, & AmEx Welcome.

WE ONLY SELL NEW PRODUCTS.

No Sales Tax for Customers outside of California!

7210 Jordan Ave. D55 Canoga Park, Ca. 91303

CIRCLE 431 ON READER SERVICE CARD

1-800-334-KIWI

Quadra

630 all configurations ..... Call	650 16/500 ..... $2499
650 8/230 ..... $1999	650 16/500 CD $2799
650 8/230 CD $2299	650 24/1 Gig $3099

Power Mac

6100 8/160 ..... $1599	7100 8/250 CD $2875
6100 8/160 CD $1899	7100 16/500 ..... $3099
6100 16/500 ..... $2149	7100 16/500 CD $3299
6100 24/1 Gig $2749	7100 24/1 Gig $3699
6100AV 16/500 CD $2699	7100AV ..... Call

PowerBook

150 4/120 ..... Call	520c 4/160 ..... $2699
520 4/160 ..... $2115	520c 8/160 ..... $2925
520 8/160 ..... $2349	520c 12/240 ..... $3275
520 12/240 ..... $2749	540c ..... Call

Specials

Centris 660AV 8/230 CD $1499	Duo 210 4/80 ..... $775
LC III & IIvx ..... Call	PB 145b 4/80 ..... $1199
Laser Select 310 ..... $499	PB 180 4/120 w/modem $2049

All products in this ad are NEW.
Visa & Mastercard No Surcharge.
Better Business Bureau Member.

Kiwi Computers, PO Box 67381, L.A., CA 90067
Toll Free (800) 334-5494 Fax (310) 286-9667
In California and Overseas (310) 553-4507
Hours: Mon-Fri 7.30am-6pm, Sat 9am-2pm PST

All products have a 1 year warranty.
Returns are subject to a 15% restocking fee.
Prices subject to change. Quantities may be limited
Not affiliated with Kiwi Software, Inc.

CIRCLE 404 ON READER SERVICE CARD

DIGITAL graphics SYSTEMS

We sell only the best quality, highest perfomance products from the most respected manufacturers in the industry.

(800) 273-2DGS

DIGITAL VIDEO PRODUCTION
COMPUTER ANIMATION
DIGITAL PHOTOGRAPHY
PROFESSIONAL PUBLISHING
ELECTRONIC PREPRESS

CIRCLE 423 ON READER SERVICE CARD

LATEST

Mac S·A·L·E INTERNATIONAL

SPECIALS

SYSTEM SPECIAL

$999.00
(Upgrade to 5/80 w/CD Only $200 more)

Mac IIVX 4/80
Apple Color Plus Display
Apple Stand. II Keyboard
(All Factory Refurbished)

Brand New
PowerBook Duo 210
4/80
68030/25 MHz
Grayscale Screen
$699.00

$979.00
(Upgrade to 8/80 Only $100 more)

Mac IIci 4/80
Apple 13" RGB Monitor
Apple Stand. II Keyboard
(All Used)

INCREDIBLE BLOW-OUT!!

NEW Microsoft Office - $149.00
(Includes MS Word, Excel, Powerpoint & Mail)
ONLY $99.00 with Any CPU Purchase

BUY THE NEC CD-ROM DRIVE & MS OFFICE ON CD-ROM FOR ONLY - $199.00

NEW NEC CD DRIVE - $99.00
Includes Over $200 Software Free:
T/Maker Clickart 2000 (Over 2000 EPS Images) & FWB CD-ROM Toolkit & The Merchant

SUPER DEALS!

New Apple LaserWriter Select 310
300 dpi, PostScript, 5 pages/minute, 250 Sheet Cassette Tray, Compact Size
► $449.00 ◄
(Only $399.00 w/CPU Purchase)

New Quadra 660AV 8/230 W/CD
PowerPC Upgradeable
68040-25 MHz, w/FPU & PMMU
Built-in Ethernet & AV Technology
► $1,499.00 ◄

New Mac IIVX 5/80 W/CD
PowerPC Upgradeable
68030-32 MHz
w/68882 Math Coproc.
► $1,099.00 ◄

New Apple Personal LaserWriter LS
300 dpi, 4 Pages/Minute, 50 Sheet Tray, Compact Size
► $399.00 ◄

New Quadra 610 8/230 W/CD
PowerPC Upgradeable
68040-25 MHz, w/FPU & PMMU
Built-in Ethernet
► $1,399.00 ◄

New Mac IISI 5/160
68030-20 MHz, w/MMU
Built-in Video Support
One Internal Expansion Slot
► $699.00 ◄

NEW

New Mac IIci	5/80	$879.00
New Mac LC 520	4/80	$1,299.00
New Centris 610	4/80	$949.00
New Centris 650	8/230	$1,449.00
New Laserwriter II Engine		$499.00
New Apple Mouse II		$59.00
New Apple Basic Color Monitor		$129.00
New Apple Color Plus Display		$299.00
New Apple 16" Color Monitor		$799.00
New Apple 21" Color Monitor		$1,599.00
New Apple One Scanner		$429.00
New Ext. Hard Drive Enclosures		$69.00
New Extended Keyboards		$89.00
Power Mac, PowerBook, Duo's--In Stock		
New Microsoft Works (Integrated Software)		$49.00

USED

Mac Plus	1/0	$199.00
Mac SE (800K)	1/0	$225.00
Mac SE/30	1/0	$479.00
Mac Classic	2/40	$459.00
**Mac IIvx	4/0	$699.00
**Mac IIvx	4/80	$799.00
**Mac IIvx	5/80 W/CD	$999.00
Mac II	1/0	$199.00
Mac IIsi	5/80	$529.00
Mac IIcx	1/0	$399.00
Mac IIci	1/0	$579.00
Mac IIsi NuBus Adapter w/FPU		$49.00
Apple 12" RGB Display		$199.00
Apple 13" RGB Display		$325.00
**Epson Color Scanner (300dpi, Flatbed Single Pass)		$399.00

**Factory Refurbished

1-800-729-7031

Prices represent a Cash Discount - off Full Price.
Returns at discretion of Mgmt./15% Restocking fee.

1150 W. Alameda Dr., Tempe, AZ 85282
(602) 858-0900 / FAX: (602) 858-0811

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

CIRCLE 401 ON READER SERVICE CARD

PowerMAC

6100 8/160	$1499
6100 8/250/CD	$1899
6100 16/250/WIN	$2149
6100AV 8/250/CD	$2199
7100 8/250	$2399
7100 8/250/CD	$2699
7100 16/250/WIN	$2849
7100AV 8/500/CD	$3349
8100 8/250/CD	$3699
8100 16/500/WIN	$4349
8100 AV 16/500/CD	$4649
8100 16/1GIG/CD	$4995

QUADRA

950 8/0	$2799
950 8/500	$3299
950 16/1GIG	$3699
840AV 8/230	$2399
840AV 8/230/CD	$2699
840AV 16/1GIG/CD	$3499
660AV 8/230	$1399
660AV 8/230/CD	$1699
650 8/230	$1899
650 8/230/CD	$2199
650 8/500/CD	$2499
610 8/160	$1299
610 8/160/DOS	$1399
610 8/230	$1499
610 8/230/CD	$1799
610 8/500	$1899
605 4/80	$729
605 4/160/SOFT	$1049
605 8/160	$1049

MORE MACS

Classic II 4/40	$549
Classic II 4/80/color	$679
Mac LC III 4/160	$699
Centris 4/80	$749
Centris 650 8/230	$1699
Centris 650 8/230/CD	$1949

POWERBOOK

540C 12/320/FAX	$4849
540C 4/320	$4229
540 4/240	$2839
520C 8/160	$2829
520C 4/160	$2629
520 4/160	$2079
180C 4/160	$CALL
180 4/120	$1799
165C 4/120	$1695
165C 8/120	$1895
165 4/80	$1399
165 4/160	$1499
145B 4/80	$1149
145B 8/120	$1399

DUO'S

250 4/200	$1499
250 12/200/EXPRESS	$2149
270C 4/240	CALL
280 4/240	$2389
280C 4/320	$3299
280C 12/320/Modem	$3759
Mini Dock	$195
Duo Dock	$349
Duo Dock 230HD	$549
Duo Dock II	Call

SYQUEST

44MB Int/Ext	$199/$239
88c Int/Ext	$309/$369
105 Int/Ext	$389/$449

HARD DRIVES

Quantum 80MB	$129
Quantum 230MB	$199
Quantum 500MB	$399
Quantum 1GIG	$699
Barracuda 1GIG	$799
Barracuda 2.1GIG	$1679
External Chasis	$99
Apple 2.5" 20MB HD	$49

UNIVERSITY, GOVERMENT, AND FORTUNE 1000 P.O.'S, Trained Staff, We ship out of U.S.!

LA's LEADING COMPUTER STORE!

LA COMPUTER CENTER

(310) 473-2535 FAX (310) 312-9041

FEDERAL EXPRESS Next Day Shipping! Call for Latest Pricing.

APPLE 14" HIRES RGB COLOR DISPLAY NOW ONLY $339

APPLE SELECT 310 300DPI POSTSCRIPT NOW ONLY $599

POWERBOOK 165C 4/120 COLOR NOTEBOOK NOW ONLY $1695

PERSONAL LASER 300 300DPI PRINTER NOW ONLY $499

RADIUS Monitors & Graphics Cards

Photobooster for Stage II Rocket	$599	VideoVision Presentation	$1749
Photobooster for Rocket	$599	VideoVision Studio	$3299
Photobooster for Rocket	$799	PrecisionColor Pro 24x Interface	$1349
Stage II Rocket	$1499	PrecisionColor Pro 24xk	$799
Stage II Rocket w/ Macromedia	$1795	PrecisionColor Pro 24xp	$499
Rocket 33 Accelerator	$999	PrecisionColor 8xj Interface	$499
RocketShare	$399	Color Pivot Nubus Interface	$499

GE 4 YEAR ON SITE WARRANTY!

To find out how much, locate the product's value on the table below:

$100 to $350	$351 to $350	$701 to $1200	$1201 to $2000	$2001 to $3000	$4001 to $5000
$49.95	$79.95	$139.95	$169.95	$199.95	$259.95

Apple Printers

Personal 300 w/Toner	$499
Select 310 w/Toner	$599
Select 320 w/Toner	$899
Select 360 w/Toner	$1449
Pro 630 w/Toner	$1899
Pro 810 w/Toner	$4399
Portable StyleWriter	$399
Apple Color Printer	$549
Apple Color StyleWritr	$599

Hewlett Packard

DeskWriter 550c	$499
DeskWriter 560c	$569
DeskWriter 310	$339
DeskWriter 310/SHEET	$399
DeskJet 1200c (PS)	$1999
LaserJet 4ML	$989
LaserJet 4MP	$1299
LaserJet 4M	$1799
LaserJet 4M Plus	$1995
Scanjet IIcx	$929
220 Volt Products	CALL

CD-ROM Drives

Apple300CD PLUS INT	$269
Apple CD 300 Ext	$389
Apple Power CD	$399
Apple Multimedia CD	$549
NEC 3xi/xe/xp	499/599/659
NEC 4X (4 spin!)	$995

SCANNERS

Agfa Arcus Plus	$2799
Agfa Transparency	$689
Microtek II	$639
Microtek IIG	$459
ScanMaker IIXE	$959
ScanMaker IISP	$779
UMAX 600ie	$689
UMAX UC 840	$995
UMAX 1260	$1499

Apple Monitors

14" Plus Color	$339
14" RGB HIRES	$349
16" RGB HIRES	$799
17" RGB HIRES	$999
21" RGB HIRES	$1699
AudioVision 14" w/adt	$629

NEC Monitors

3FGE 15" Color	$549
4FGE 16 Color	$679
5FGE 17" Color	$949
5FGP 17" Color	$1149
6FGP 21 Color	$2199

SONY Monitors

1304S 14" Color	$339
1730 17" Color	$939
17SE1 17" Color	$1079
2036 20" Color	$1799
2038 21" Color	$1999

SuperMac

Thunder II GX 1152	$2029
Thunder 24 V.30	$1569
Spectrum 24 PDQ+	$949
Spectrum 24 Series IV	$739
Spectrum Power1152	$1099
17-XL MultiMode	$929
17T Trinitron	$949
20+ Color Dual Mode	$1529
20-TXL MultiMode	$1889
21-TXL MulitMode	$2029
20" Hires Trinitron	$2379
21" Two Page Color	$1679
20" Grey scale	$789
21" Greyscale	$929
T-16IIMR	$739
ULTRA LX	$999

All prices are cash discounted. Prices subject to change without notice. Not responsible for typographical errors.

We carry only new products. Let us custom configure your system! We accept VISA, MasterCard, and AMEX.

CIRCLE 497ON READER SERVICE CARD

L O W E S T P R I C E S G U A R A N T E E D

Power Macintosh CPUs

Power MAC 6100/66 8/160	$1629
Power MAC 6100 8/250/CD	$2020
Power MAC 6100 16/500/CD	$2320
PM 6100AV 8/250/CD	$2348
PM 7100/66 8/250	$2558
PM 7100 8/250/CD	$2898
PM 7100 32/1GB	$4149
PM 7100AV 8/500/CD	$3459
PM 8100/80 8/250	$3691
PM 8100 8/250/CD	$3950
PM 8100AV 16/500/CD	$4866
PM 8100 40/1G/CD	$6399

Apple Work Group Servers

AWS 6150 8/500/CD	$3749
AWS 8150 16/1000/CD/DAT	$6519
AWS 8150 16/1000/cd/DAT/As	$7439
AWS 9150 16/1000/CD/DAT	$7999

Mac CPUs

SAVE

Q 605 4/160 W/5 BUNDLE SW	$989
Q 610 8/160	$1329
Q 630 4/250	$1239
Q 630 8/250/CD	$1697
Q 650 8/230	$2029
Q650 8/500/CD	$2595
Q 660AV 8/500/CD	$1979
Q 950 8/0	$2769
Q 950 24/1GB	$4119
Q 840AV 8/230 All Models	CALL

PowerBooks Duo

DUO 280 4/240	$2395
Duo 280 12/240/MODEM	$2829
Duo 280c 4/320 NEW!	$3349
Duo 280c 12/320/MODEM	$3829
Duo Dock FOR ALL DUOs	$499
Duo Dock II	$898
APPLE DUO EXPRESS MDM	$299

PowerBooks

PB 150 4/120	$1389
PB 165	CALL
PB 180 4/120/Modem	$2199
PB 520 4/160 NEW 040	CALL
PB 520c 4/160 NEW 040	$2619
PB 540 4/240 NEW 040	$2849
PB 540 12/240/19.2 Modem	CALL
PB 540c 4/320 NEW 040	$4395
PB 540c 12/320/19.2 Modem	CALL

Monitors

Apple 14 Color Plus	$299
Apple 14" Color TRIN	$379
Apple 14" AV	$599
Apple Multiple Scan 15"	$495
Apple Multiple scan 17"	$989
Apple Multiple scan 20"	$1929
Sony 15SE	$449
Sony 17SE Color Monitor	$1198
SuperMac 17 T Color	$989
SuperMac 20" Plus Monitor	$1539
SuperMac 21- TXL	$2149

RELISYS COLOR SCANNER

AVEC 600 DPI W/PHOTOSHOP LE	$589
AVEC 1600 X 400 DPT W/ PHOTO SHOP LE & OMNI PAGE DIR.	$969
AVEC 2400 X 600 DPI W/ FULL VER. OF PHOTO SHOP, OMNI PAGE DIRECT, AND POWER TOOL	$1949
AVEC 2400 X 2400 DPI W/ PHOTO-SHOP LE & OMNI-PAGE DIR.	$789

Limited Stock Only

Printers & Others

StyleWriter II	$279
Personal LaserWriter 320	$898
LaserWriter Select 360 (10PPM)	$1448
LaserWriter 360 Fax Modem	$298
LaserWriter Pro 630	$1989
HP DeskWriter 520 NEW!	$299
HP DeskWriter 560c	$589
HP DeskWriter 310 w/CSF	$389
HP LaserJet 4 ML	$989
HP LaserJet 4 M Plus	$1989
Global Village PP Gold	$279
Global Village pp Mercury	$359
Geoport Adaptor	$129
APPLE COMPATIBLE EXT. KB	$79

SAVE

We do Custom Config.

*Fed-Ex Available Buy It Today Get It Tomorrow**

* Via Optional Fed Ex Overnight

PRICES REFLECT CASH DISCOUNT & SUBJECT TO CHANGE W/O NOTICE

Mon-Fri 9:00 To 6:00 *Since* 1988
SAT 10:00 TO 2:00 PST
1941 Freeman #B
Signal Hills, CA 90804
Fax (310) 498-0032

Mac *Express* U.S.A

(310) 498-1230

CIRCLE 443 ON READER SERVICE CARD

Big Mac Computers, Inc.
A division of WCN

Quadra's

840AV	8/230	CALL
840AV	64/2.0	5795
950	8/400	3195
605	8/160	1050
650	8/500	CALL
630	8/230	1380

Power Books

540C	8/320	4895
540C	36/550	6295
540	4/240	2950
520C	8/160	2995
520	12/240	2895
280C	4/320	3425
280C	12/320M	3870
280	4/230	2489
180	4/80	1895
150	4/120	1380

Power MAC Upgrade

UPGRADE CARD	682
6100/60	995
7100/66AV	1695
8100/80AV	1895
8100/80	1650

Apple Monitor

14" Hi-Res. / 15"	375/495
14" Color Plus	295
16"/17"	895/975
14"AV/20"	579/1995

Apple Printer

320/630	950/1850
Person.300/310	495/595
360/810	1450/4395

Scaners

AGFA Studio Scan II	995
AGFA Horizon	16900
AGFA Arcus Plus II	2495
Umax UC840	895
Umax UC1260	1152
MicroTek 35T	960
MicroTek IIXE	850
Nikon Cook Scan	1825

POWER MAC'S

Any Custom Config. Available

	8100	8100AV	7100	7100AV	6100	6100AV
8/0	$3384	$3850	$2300	$2850	$1501	$1876
8/250	3499	3999	2425	2975	1699	1964
8/500	3734	4170	2695	3095	1899	2235
16/500	4034	4399	2995	3395	2199	2550
16/1 GB	4384	4899	3299	3850	2499	2875
24/500	4334	4899	3295	3850	2499	2895
40/1.7	5334	5895	4250	4750	3475	3875
72/2.1	6734	7195	5750	6350	4999	5495
136/1.7	8284	8795	7445	7950	N/A	N/A
256/500	11900	12599	N/A	N/A	N/A	N/A

APPLE CD 300I PLUS ADD $300. • SOFTWINDOW ADD $287. • 1MB V-RAM ADD $75.

Printers & H.P.'s

Laser 4M/4M+	1799/1899
Laser 4ML/4MP	969/1299
Laser SiMX	4240
Deskwriter/310	239/299
Deskwriter 560C	559
ScanJet IICX	925
DeskJet 1200 PS	2150
GCC Select Press 1200	5695
Xante Laser	3595

Kodak

Color Ease	6595
450GL	1395
PCD Writer 200	CALL

Audio Video

Radius Video Vision Pro	8400
SuperMac Digital Video	CALL
Phillips CD ROM Rcrdr.	CALL

Apple Logic Board

Power PC 7100	1250
Power PC 8100	1650
Power PC 6100	950
Power PC 8100AV	1995

Exchange any old MAC to NEW POWER MAC

10837 SANTA MONICA BLVD. LOS ANGELES, CA 90025
Tel: (310) 470-7099 • Fax: (310) 470-8099

Toll FREE: (800) 761-1999

Adult CD's
Call for FAX list

Call for APPLE 3rd party products • International Orders, Vise, MC & AmEx Welcome • Next Day Shipping for U.S.A. & International Prices are subject to change w/o notice • All prices shown are C.O.D. Prices

CIRCLE 453 ON READER SERVICE CARD

MacLink

Your Link to Lower Prices

800-858-4622

Dealers, Int'l & in CA
Call 818-785-2800

FaxQuote: 818-785-3100

AMERICAN EXPRESS Card · VISA · MasterCard · Discover

ALL Prices 5% Above Verified Cost • Volume Discounts

BUSINESS LEASING

Quick Approvals -- Call for Details
Lease Prices are based on 36 month/FMV

PowerMac

CUSTOM CONFIGURATIONS CALL

	CASH	Lease
8100/80, 136-4 GB w/CD	$10.3K	$324
8100/80, 72-2.4 GB w/CD	$7595	$243
8100/80, 16-1000 w/CD	$5245	$168
8100/80AV, 16-500 w/CD	$4742	$152
Insignia SoftWindows	$269	
Aldus PageMaker 5 *Native*	$399	
Aldus Freehand 4 *Native*	$449	
8100/80, 8-250 w/CD	$3786	$122
8100/80, 8-250	$3561	$114
8100/80, 8-0	$3360	$105
7100/66, 16-1000	$3490	$103
7100/66AV, 8-500 w/CD	$3401	$109
7100/66, 8-250 w/CD	$2710	$97
7100/66, 8-250	$2472	$88
6100/60, 16-500	$2348	$77
6100/60AV, 8-250 w/CD	$2216	$79
6100/60, 8-250 w/CD	$1952	$70
6100/60, 8-500	$1955	$70
6100/60, 8-160	$1551	$55

Quadra

	CASH	Lease
Quadra 840AV, 16-1000 w/CD	$4159	$137
Quadra 840AV, 8-500 w/CD	$2659	$93
Quadra 840AV, 8-230 w/CD	$2389	$86
Quadra 630AV, 8-350 w/CD	$call	lease
Quadra 630AV, 8-250 w/CD	$call	lease
Quadra 630AV, 8-250	$call	lease
Quadra 650, 8-230 w/CD	$call	lease
All Other Quadras	$AVE	lease

PowerBook

	CASH	Lease
Pwrbk 540c, 12-320 w/modem	$4736	$169
Pwrbk 540c, 4-320	$4136	$148
Pwrbk 540, 12-240 w/modem	$3347	$119
Pwrbk 540, 4-240	$2747	$98
Pwrbk 520c, 4-160	$2521	$90
Pwrbk 520, 4-160	$1973	$70
Duo 280c, 12-320 w/modem	$3674	$131
Duo 280, 12-240 w/modem	$2747	$98
Duo 280, 4-240	$2295	$82
Duo 250 4-200	$1399	$50
POWERBOOK 150	*CALL*	*CALL*

Printers/Scan

	CASH	Lease
ALL Apple LaserWriters	$call	lease
ALL Hewlett Packard	$call	lease
ALL GCC Products	$call	lease
Agfa Arcus Plus scanner	$call	lease
Supermac ProofPositive	$call	lease
LaserMaster DisplayMaker	$call	lease
3M Rainbow	$call	lease
All LaserMaster	$call	lease
All NewGen	$call	lease
ALL UMAX Scanners	$call	lease
All Xante	$call	lease

Displays

Apple 20" Multiple Scan	$1910
Apple 17" Multiple Scan	$985
Apple 14" AV Color Display	$635
Apple 14" Trinitron Display	$389
Apple 14" Color	$195
Supermac PressView 21	$3270
Supermac 21•TXL	$2055
Supermac 20•TXL	$1995
Supermac 17•T	$924
RasterOps 20/20	$1579
RasterOps ClearVue Color/17	$899
Radius PrecisionColor/20v	$1399
Radius PrecisionColor 17	$1039
Radius TPD/20GS	$890
Sony GDM15FS	$479
Sony 17SE1	$1195
ALL Unlisted Models	$call

Audio/Video

Supermac T-II GX1360	$2250
Supermac T-II GX1600	$2995
Supermac Spectrum 1152	$1139
Radius P'Color Pro 24X	$1315
Radius P'Color 24XP	$499
DYAXIS II or OTARI "RADAR"	LEASE
R'Ops Paintboard Turbo LX	$785
RasterOps MoviePak 2	$3989
Radius VideoVision Studio	$3190
Seagate "Barracuda" 2	$1750
Seagate "Barracuda" 4	$2960
Data Translation Media 100	Lease
Sony & Philips CD-Recorders	Lease
Pioneer Quadruple Spin CD-ROM	$1098
PRO DIGITAL AUDIO	Lease
PINNACLE RCD-202 CD-R	Lease
OSC DECK II/METRO	Call

Due to publication time constraints prices may vary • Pease call for the lowest possible prices

MacLink • 15500 Erwin St #2002 • Van Nuys CA 91411

CIRCLE 535 ON READER SERVICE CARD

CALL THE MAC EXPERTS!

You won't find anyone with more Macintosh expertise than the experienced consultants at PowerMax. Give us a call today for a competitive quote and expert advice. Make our knowledge your power!

Mac CPU's & Powerbooks

PowerMac 6100/60 8mb ram..$1549
PowerMac 7100/66 8mb ram..$2449
PowerMac 8100/80 8mb ram..$3497
Workgroup Srvr 8150- loaded!$7999
Call for latest Quadra close-out pricing!
Powerbook 520 8/160.....$2159
PowerBook 520C 8/160.....$2744
New PowerBook 150.....$1399

Call for custom configuration quotes!

Peripherals

Mils. Diamond Pro 26" Display...$8995
20" Grayscale Display.....$849
ViewSonic 21" Color Display.....$1849
We carry Apple, Sony, SuperMac, NEC, Radius RasterOps & Mitsubishi Monitors!
QMS Hammerhead 11x17 600 dpi.....$4148
GCC ColorTone Dye-Sub Printer...$6395
UMAX 840 Scanner.....$929
NEW! Umax Powerlook w/transpar.....$3175

We're digital video & multimedia experts, call for quotes on complete systems!

Software & Hard Drives

Now Utilities Software.....$74
Adobe Illus 5.5 for PowerMac.....$383
We'll match any software price in this magazine!
FWB External Syquest 44/88.....$469
Syquest 200 Mb. External Drive...$539
External 240Mb. Drive w/FWB.....$229
External 540Mb. Drive w/FWB.....$449
Micronet 2024 Array..... $2588
FWB Sledgehammer 4200FMF...$4519

We specialize in hi-performance drives & peripherals & have millions of $ in inventory

The PowerMax Difference

We've been designing complete Macintosh systems since 1987. Most of all of us at PowerMax have used Macs personally since well before that. What this means is that we don't just sell you a box and hope you never call back.

We'll give you some advice, customize and bench-test your system, and give you support before, during and *after* the sale. We're experts on everything from helping first-time users to designing high-end video production systems. Call today and hear the PowerMax difference!

PowerMac 6100 Complete System Deal

Includes: 16Mb. Ram, 160 hard drive, extended keyboard, internal Apple CD ROM drive, 14" color monitor, surge protector, PowerGames™ software package, PLUS our incredible Power Warranty Package!

$2699 or $109/mo.*

Systems may vary from pictures

POWER MAX
Knowledge is Power

800-844-3599

24 hour fax line:
1-503-232-7101

Available terms include:
COD, Visa, MasterCard, American Express and Company PO's
Ask about our fantastic business leasing programs!

*Based on 36 month lease. Call for details!

CIRCLE 446 ON READER SERVICE CARD

MacAttack

$$$

(800) 299-MACS (800) 299-6227
409.690.5353 (Fax) 409.690.5345 (Intl. Sales)
Contact Us Via Internet! MASales@aol.com

We Attack High Prices!!

Prices subject to change — please call for latest pricing. We carry hundreds of items — call for availability. Your satisfaction is our goal. Prices are C.O.D. and subject to change. International Orders and Fax Orders Welcome!

New Macs

Centris 660av 8/500 $1549
Quadra 610 8/230/CD $1893
Quadra 650 8/230 $1933
Quadra 660av 8/500/CD $1888
Quadra 950 8/0 $2713
One Year Warranty On New Macs !!
We sell only Apple original serial numbers.

PowerMacs

6100/60 8/160 $1651
6100/60 8/250 CD $2078
6100/60 AV 8/250 CD $2358
7100/66 8/250 $2631
7100/66 8/250 CD $2885
7100/66 AV 8/500 CD $3620
8100/80 8/250 $3665
8100/80 8/250 CD $3898
8100/80 16/1000 CD $5313

CDs

Apple CD 300 Internal $223
Apple CD 300 External $304
Apple CD Multimedia Kit $417
(Includes Apple Design Power Speakers II, CD 300 Plus External, & 4 CDs)

Monitors

Apple Color Plus 14" $288
Mac 14" Trinitron $362
AudioVision 14" $613
Apple Multiscan Trinitron 17" $952
Sony Multiscan 17SE $1177
Sony Multiscan 20" $CALL
Apple Multiscan 20 Display $1913
NEC Monitors $CALL
RasterOps $CALL
SuperMacs Monitors & Video Cards $CALL

Powerbooks

Duo 280 4/240 $2308
Duo 280 12/240 Modem $2867
Duo 280c 4/320 $3243
Duo 280c 12/320 Modem $3708
520 4/160 $2060
520c 4/160 $2632
540 4/240 $2867
540 12/240 Modem $3494
540c 4/320 $417S
540c 12/320 Modem $4779
Duo Dock/Duo Dock II $477/836

Software

After Dark & Disney $29
After Dark & More After Dark $38
Quicken 4.0 $44
MYST CD-ROM $47
Microsoft Encarta $90
Canvas 3.5 $259
Filemaker Pro 2.1 $260
SoftWindows $309
Excel 4.0 $310
Word 5.1 $311
MS Office 3.0 (CD-ROM or Disks) $CALL
PageMaker 5.0 $520
Photoshop 2.51 $540
Adobe Illustrator (PowerMac) $390
Quark XPress (PowerMac) $688

Keyboards

Apple Design/Adj. Keyboards $75/120
Apple Extended Keyboard II $161
We have Intl Keyboards!

Other Stuff

Kensington Turbo Mouse $110
Apple Quick Take 100 $667
Newton & Accessories $CALL
PLI (Syquest) 44, 88, 200 $CALL

Scanners

HP Scanjet IIcx $980
HP Scanjet IIP $730
One Scanner $623
Color One Scanner $938
AGFA Studio Scan $965
AGFA Arcus Plus $2573

Modems

GV PowerPort Gold $281
GV PowerPort 500 Series $326
GV PowerPort Mercury $329
Geoport Telecom Adapter $113
SupraFax/LC $223/157
SupraFax 28.8 $CALL

Printers

StyleWriter II $290
Apple Color StyleWriter Pro $571
LW Select 300, 310, 320, 360 $CALL
LW Pro 630 $1912
LW Pro 810 $4374
HP Laserjet 4SI $3190
HP Laserjet 4SI MX $4670

FREE Mousepad With Every Order !!

We ship Airborne Express International shipments handled by DHL.
COD, Mastercard, and VISA accepted.
Hours: M-F, 8-7 CST.
15% Restocking Fee For Returned Merchandise.

Call Today About Other Great Product Offers!!

CIRCLE 438 ON READER SERVICE CARD

CALL OUR **DIGITAL VIDEO** NON-LINEAR
WORKSTATION SPECIALISTS

- TRUE BROADCAST (D-1) QUALITY
- HIGH-8, S-VHS & BETACAM
- 3D ANIMATION SYSTEM DESIGN
- C.D.I., CD-ROM & MULTIMEDIA

COMPLETE VIDEO WORKSTATION
TurnKey Solution
$9,995

(Fax) 714-375-6397
(Voice) 714-375-6390

Visa • Mastercard • Discover Welcomed

Prices subject to change without prior notice; reflect a cash price only.

MULTIMEDIA BLOWOUT

Cineworks Editing Workstation....CALL
Radius Video Vision Studio $2975
Personal Animation Recorder .....CALL
RasterOps Movie Pack Pro $2975
Video Machine .....CALL
Media 100// Digital Magic .....CALL
Cosa After Effects 2.0// Hitchcock .....CALL
Diaquest Animation Systems .....CALL
Digital Video Is Happening Gives Us A Call!!!

MACINTOSH

Quadra 950 8/0.....$2710
Quadra 800-8/230 .....$2495
Quadra 800 16/1G.....$3555
Quadra 840AV 16/1G.....$3545
Quadra 840 24/2 (array).$6175
Quadra 650 8/500CD $2475
Quadra 650 8/230 CD $2225
Quadra 630 8/250CD $1650
6100/60 8/250 CD.....$2150
6100/60AV 8/250 CD $2350
7100/66 8/250 CD.....$2625
7100/66 AV 8/500CD $3620
8100/80 8/250 CD.....$3890
8100/80 AV 8/500 CD $4995
8100 AV (any config).....Call
CALL FOR $ ON ANY MAC SYSTEM!

SPECIAL DEALS!

Supermac Thunder 24 .....$1145
External Apple 230HD.....$255
Supermac Thunder II lite $1375
CALL for pricing on any Macintosh Monitor!

PRINT/DIGITAL PROOFING

Kodak Color Ease $6275
GCC Color Tone $6225

Se Hablamos Espanol LLamenos Para Consultacion

800-429-7779

Mac Care INCORPORATED

CIRCLE 405 ON READER SERVICE CARD

Make your PC peripherals Macintosh compatible!

Mediator lets you use your PS/2 style peripherals just as if they were connected directly to your Mac! Use the Cybex AutoBoot Commander in conjunction with the Mediator to control a mixture of PCs and Macs from a single keyboard, monitor and PS/2 mouse. Or allow several users to share a Mac with PC-Expander Plus™. With the Mediator, going multiplatform is easy!

- Compatible with most Macintosh computers with detachable monitors
- Supports VGA, SVGA and Macintosh HiRes video
- Supports PS/2 style keyboard, mouse or peripherals

For Sun® workstation support, ask about our Mediator for Sun!

Mediator™ for Macintosh

Cybex Corporation
4912 Research Drive • Huntsville, AL 35805 USA
(205) 430-4000 • FAX (205) 430-4030

CYBEX™

Program Available

CIRCLE 421 ON READER SERVICE CARD

MAC CITY COMPUTERS

QUALITY SERVICE AND VALUE SINCE 1987
NO SALES TAX OUTSIDE CALIFORNIA
PLEASE ASK FOR LATEST LOW PRICES
Prices are Subject to change without notice!
THANK YOU FOR YOUR BUSINESS
INTERNATIONAL ORDERS
VISA-MC-AMEX-COD OK

Powerbook

540c 4-320	4299
540c 12-320	4699
540c 20-550	5299
540 8-240	3149
540 12-240	3249
540 20-320	3699
520c 8-160	2879
520c 20-320	3499
520c 8-240	2799
520 8-160	2299
520 12-250	2599
180 4-120	1799
180c / 165c	call
165 4-160	1499
150 4-120	1399
145B 4-80	1099
Duo 280c 12-320 w/m	3799
Duo 280 12-240 w/m	2899
Global v. Mercury	329

Power Mac

8100AV 32-1gig cd	5746
8100AV 72-2.1g cd	7646
8100 136-1gig cd	8296
8100 40-1gig	5046
8100 24-500 cd	4546
8100 16-500	4246
8100 Soft Win	Call
7100AV 16-500 cd	3776
7100AV 24-1gig cd	4299
7100 72-1gig cd	5246
7100 16-500	2996
7100 8-250	2496
7100 Soft win	Call
6100AV 16-500 cd	2776
6100AV 8-250 cd	2276
6100 8-160	1626
6100 24-500	2446

CALL FOR CUSTOM MADE CONFIGURATIONS

Quadra

Q840AV 16-500 CD	3196
Q840AV 8-230 CD	2796
Q650 16-500	2446
Q650 8-230	1946
Q610 8-230 CD	1696
Q610 8-160 DOS	1446
Q660AV 8-230	1396
Q660AV 8-230 CD	Call
Q950 8-0	2796
Q800 8-500	2396
Q630 12-500	1776
Q630 4-230	1229
Q605 8-230	1046

Macintosh Performa

Supermac

Sup 17T	939
Sup 17Multi	749
Sup 20T XL	1899
Sup 20 plus	1576
Thunder 24	1629
Thunder II	Call
Thunder IIGX	2586

Monitor

Apple mono	99
Apple 14" PLUS	289
Apple 14Trin	369
Apple 15"	CALL
Apple 17 Multi	959
Apple 20T Multi	1899
SONY	
Sony 17Se1	949
Sony 1730	929
Sony 1430	495
Sony 20SE	1876
RADIUS	
Rad prec 21" flat	1969
Rad 20v 20"	1199
Rad color pivut	799
Rad 15" pivut	586
Rad Prec 24xp	476
Rad VideoVision Studio	3189
NEC	
Nec 3v 15"	479
Nec 3FGE	579
Nec 4FGE	679
Nec 5FGE	999
Nec 5FGP	1099
Nec 6FGP	1999

Printer

Pro 810/630	Call/1879
Select 310	569
Select 360	1439
Select 320	879
Stylwriter II	279
Stylwriter port	369
Apple Color Printer	499
HP	
HP 4ML	986
HP 4MP	1276
HP 4M	1696
HP 4MPlus	1946
HP DJ 1200C PS	1996
HP Deskwriter 560c	549
HP Deskwriter 520	296
HP D.W 310	296
HP Scanjet IIcx	916

Microtek

ScanMaker II	596
ScanMaker IIxe	926
ScanMaker IIsp	766
ScanMaker IIg	466

Wacom

UD12#12 Tablet	499
SD12#18 Tablet	699
SD12#18 Tablet	1999
ART6#8 Tablet	299

PLI

270	EXT	599
44/88C	EXT	486
105MB	EXT	536
128 OPTICAL		1096
MINI ARRAY 1G		1996

Hard Drive's

Quantom 230MB	169
Quantom 250MB	199
Quantom 540MB	339
Quantom 1.08G	679
Quantom 2.1g	1196

Umax

UC 840	896
UC 630	666
UC 1260	1196
UC 1200SE	2486

Tel: (818) 505-8991
Fax:(818) 505-8992
11026 Ventura Blvd STUDIO CITY, CA 91604

YOUR #1 MACINTOSH DEALER
ALL OF YOUR HARWARE NEEDS ARE UNDER OUR ROOF
WE WILL CUSTOM MAKE ANY SYSTEM FOR YOUR NEEDS
ALL PRODUCTS ARE NEW WITH ONE YEAR WARRANTY

CIRCLE 442 ON READER SERVICE CARD

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER®

IMAGE MACHINES

1-800-909-7879
1-413-436-7879

Power Macintosh Computers · PowerBooks
Apple · NANAO · NOKIA · Radius · SONY · SuperMac

NONLINEAR VIDEO EDITING & ANIMATION Systems & Software
DATA TRANSLATION MEDIA 100 · *SiliconGraphics* INDY
Radius VideoVision Studio *version* 2.0 Telecast
Electric Image · CoSA · VIDI Presenter Pro · form·Z
The Animation Stand · YARC · SHADE · STRATA
NO CALIFORNIA SALES TAX! NO PAYMENTS FOR 90 DAYS!

TRADE IN YOUR OLD MAC FOR A NEW MAC!

LOOK! AT OUR PRICES

Quadra/Power Mac	BLACKBIRD/PB/DUO	DEMO UNITS
8100 8-250. 3370	150 4-120 1445	Q800 2100
8100 16-500..3779	150 8-200 1699	Q840 ..... STOCK
8100 32-1GB.. CALL	520C 4-200 ... CALL	Q950 8/0 2385
7100 8-250.. 2390	520C 16-200 3239	DUO 230 975
7100AV 8-500 CALL	520 8-200 2425	IIG/IIF ..... STOCK
7100 16-500 2880	540C ..... CALL	PB 170 1140
6100 8-250 CD2090	180 1985	PB 180 ..... CALL
6100 8-160.. 1595	180C 4-120 . STOCK	**MORE DEMO UNITS IN STOCK**
Q840 16-1GB CALL	DUO 280C ..... CALL	LCII /LCIII ..... CALL
Q800 8-0 1950	280 4-240 2480	14" MONITOR...CALL
950 ..... CALL	250 4-200 1570	CTR 650/660. CALL
900 ..... STOCK	230 4-80 ..... CALL	

PB Upgrade

180 to 540 ...	1850
180c to 540c .	CALL
165 to 520 ...	1325
170 to 520 ...	1425
170 to 520c...	CALL
145 to 520 ...	1540

LOGIC BOARDS

Q-840 AV ..... CALL
PPC 7100 IN STOCK
Q / C 650 ..... CALL

PARTS

POWER SUPPLIES
FLOPPY DRIVES
HARD DRIVES
LOGIC BOARD

UPGRADE

Q800 TO 840 950
LC / LCII / LCIII TO Q605 $495
CALL FOR INFO.

Special Upgrade
800, 840 to PPC 8100 $1495
VX, 650 to PPC 7100 $1150
610, 660 to PPC 6100 $ 839

WE SELL: NEW MACS, PRE-OWNED MACS AND PARTS!
PLUS MONITORS, SCANNERS, PRINTERS, MODEMS & MORE

INTERNATIONAL COMPUTER & NETWORKING
FON 310·441·9181 ■ FAX 310·479·0124
10835 SANTA MONICA BLVD., SUITE 102, LOS ANGELES, CA 90025

CIRCLE 439 ON READER SERVICE CARD

ADVANCED LOGIC INTEGRATION, INC.

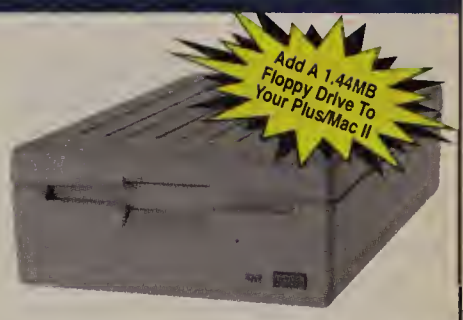
VersaLink $259 List

Four Port Serial Card

- Add Four Additional Serial Ports To Your Mac
- Plugs Into Any NuBus Slot
- Power PC Compatible With Native Drivers
- Supports Up To 230K bps Asynchronous
- Full Communications ToolBox Support
- Access All Ports Simultaneously
- AppleTalk/Router Compatible
- RS-232D/422 Interface
- RS-485 Interface Available

VersaLink Pro $359 List

- Includes All VersaLink Features Plus:
- High Speed Communication Coprocessor
- Perfect For V.Fast Modem BBS's
- 230K bps on All Ports Simultaneously



HD Drive $259 List

3.5" External Floppy Drive

- Supports 1.44MB and 800K Floppy Disks*
- Fully SuperDrive Compatible
- Adds Second Floppy Drive To Newer Single Drive Macs**
- Green/Red Read/Write Indicator Light
- Mac "Platinum" Color

HD Ultra Drive $339 List

- Includes All HD Drive Features Plus:
- Allows Mac 512Ke And Above To Recognize 1.44MB Mac and IBM Disks
- Apple's High Density Drive Upgrade Not Needed

** Mac II, IIfx Requires Mac II Adapter Cable - $19*
*** Quadra, Centris Require Quadra Adapter Kit - $49*

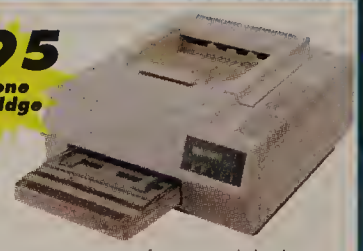
ADVANCED LOGIC INTEGRATION, INC. IS LOCATED AT 1620 E. BELTLINE ROAD, CARROLLTON, TX 75006.
LARGE QUANTITY DISCOUNTS ARE AVAILABLE. PRICES ARE SUBJECT TO CHANGE.

CALL US AT (214) 446-8444, FAX (214) 446-8647
DEALER INQUIRIES ARE WELCOME. APPLELINK: ALI.ENG

CIRCLE 419 ON READER SERVICE CARD

The SX-29000 Fast 600 dpi Laser Printer!

$1195 Includes one toner cartridge



The SX-29000 is a combination of high-quality, high-performance products. The marking engine is the popular Canon SX—the same 8 ppm printing mechanism used in the most popular laser printers.

- 8MB RAM expandable to 16MB
- AMD RISC processor
- 850 x 850 dpi equivalent gray scale
- PostScript® language compatible with 35 built-in scalable fonts using PhoenixPage
- Simultaneous active ports for use with both PCs and Macs
- Automatic PCL and Postscript emulation switching
- SCSI port for hard-drive based font library

the PRINTER WORKS Since 1982

Order Toll Free 1-800-225-6116

3481 Arden Road, Hayward, California 94545

CIRCLE 483 ON READER SERVICE CARD

MACS FOR LESS

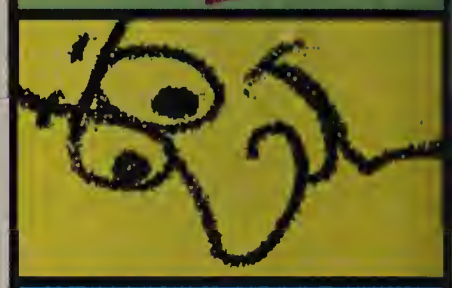
BUY SELL TRADE NEW USED

Call for our Super Daily Special

Systems	Prices From
Mac+, , SE, SE/30, LCI/II/III	$199
Mac II/IIx/cx/ci/fx/vx/si	$199
Classics/II/Color	$425
Quadras & Centris	Call
Powerbooks & Portables	Lowest
Power Macs	Instock
Performas	Call
Apple Monitors	Lowest

MP-Computers
800-445-6767 ORDERS ONLY
415.989.0661 Info & Internat'l
415.968.0509 FAX

CIRCLE 426 ON READER SERVICE CARD



HOT SHOPPER PRODUCT CATEGORIES HELP BUYERS FIND THE PRODUCTS THEY NEED FAST.

PowerMac

6100 8-0/160	1389/1469
6100 8-250 CD	1829
6100 8-500	1789
7100 8-0/250	2099/2199
7100 8-250 CD	2449
7100 16-500	2849
7100 72-2GB	5299
8100 8-0/250	3095/3199
8100 8-250 CD	3449
8100 16-500	3899
8100 16-1GB CD	4249
8100 72-2GB	6299
6100 av 8-0	1829
6100 av 8-250 CD	2149
7100 av 8-0	2449
7100 av 8-500 CD	2999
7100 av 72-2GB	5699
8100 av 8-0	3599
8100 av 16-500 CD	4299
8100 av 72-2GB	6799

QUADRA

QUADRA 630 4/250	1239
QUADRA 630 8/500	1579
QUADRA 950/840av	CALL
QUADRA 800/650	CALL
QUADRA 610/605	CALL
Apple DOS Card	229

SOFTWARE

Aldus PageMaker 5.0a	449
Adobe Illustrator 5.5	369
Adobe Photoshop 3.0	CALL
Microsoft Office 3.0	399
QuarkXpress 3.3	575
SoftWindows 1.0	289
Other Software	CALL

Hard Drives

230/270	189/220
540MB/1GB	325/625
1.4/2.1GB	849/1099
250/340MB 2.5"	280/369
540MB 2.5" F/PB.	559
Complete Ext. Case	65
Other Drives & PLI	CALL

PowerMac Logic Board Upgrades

6100/6100AV	899/1299
7100/7100AV	1499/1679
8100/8100AV	1999/2149
AV Card Upgrade	299

SPECIALS

LCIII (New) 4/80 $619 4/160 $669

SUPERMAC 20" Hi-Res Max. Res. 1360x1024 Trinitron Tube $1299

POWERBOOKS

New 150	4/120	1359
520	4-0/160	1949/2049
520C	4-0/160	2510/2610
540	4-0/240	2679/2849
540C	4-0/320	3999/4249
165C	4/80	1699
180	4/120	CALL
250	4/200	1599
280	12/240 W/M	2749
280C	12/320 W/M	3799
4/10MB Mem. F/PB.		129/299
Duo Dock/Dock II		399/849
Duo Mini Dock		299
Apple Express Modem		149

SUPERMAC

Spectrum 24 Ser. IV	499
Spectrum 24 PDQ+	599
21" Platinum	649
17"/17XL	549/829
20"/21" Color	849/1499
20" Trinitron Hi-Res.	1299
20TXL/21TXL	1929/2049
PressView 21T	2999
Thunder IIGX 1600	2979
IIGX 1360/1152	2429/1999
T16IIMR	669
E Machine E-20	949
Futura SX/II LX	199/599
ProofPositive 1/2 Page	CALL

Printers & Scanners

Pro 600/630	1299/1[illegible]
Pro 810 800dpi	3999
Select 360/310	1429/529
Personal 300/320	449/879
HP 4ML/4MP	969/1295
HP 4M/4M+	1599/1885
HP 4/4+	1120/1390
HP DeskWriter 560C	565
HP DeskJet 1200C PS.	2045
HP ScanJet IICX	919
220 Volt Product	CALL

UMAX

630OA1 349 — 600dpi, Flatbed Scanner, Grayscale, w/OCR

630LE/840	589/825
1260/1200SE	1125/1999
Other	CALL

Sales (818) 787-3282
Fax (818) 787-5555

★ All prices reflect cash order only & are subject to change without notice.

COMPU.D International, Inc.
1-800- 929-9333

Dealers & Resellers
Call for complete product list & volume discounts.
IBM TOSHIBA COMPAQ

CIRCLE 434 ON READER SERVICE CARD

DATA MICRO COMPUTER

Dealers & International Sales Welcome!

800-345-1234
TEL:(310) 398-3300
FAX:(310) 391-2488

3847 Grand View Blvd. Los Angeles, CA 90066

Call us last with your best prices!

Best Prices,Service & Delivery

Next & same day shipping available! No sales tax for outside of California orders. Prices subject to change without notice!

POWER PC

6100	
8/160	1595.
8/160CD	1895.
8/250CD	1985.
16/250 Win.	2195.
AV 8/250CD	2189.
AV 16/250CD	2475.
7100	
8/250	2547.
8/250CD	2827.
16/250 Win	3026.
8/500CD	3052.
16/250CD	3127.
8100	
8/250	3652.
8/250CD	3927.
16/500	4197.
16/500 Win	4477.
16/1Gig CD	4687.

QUADRA'S

605 4/160	997.
605 8/160	1147.
610 8/160	1295.
610 8/230CD	1877.
650 8/230	1995.
650 8/230CD	2295.
660AV 8/230	Call
660AV 8/500CD	Call
800 8/230	2295.
800 8/500CD	2852.
840AV 8/230	2652.
840AV 8/230CD	2952.
840AV 8/1.2	3252.
840AV 64/1.2	5352.
950 8/230	3095.
950 16/1GB	3852.
950 8/425	3252.

SuperMac 20T $ 1599. Trinitron Color

PowerBook's

145B	Call
165 4/80	1395.
165c 4/120	1689.
180 4/120	1992.
180c 4/80	2380.
150 4/120	1452.
520 4/160	2195.
520c 4/160	2677.
540 4/240	2920.
540 12/240M	3652.
540c 4/320	4452
540c 12/320M	5150.
Duo 280/280c	Call

NewGen

Imager Plus 6	CALL
Imager Plus 6L	For
Imager Plus 12	Lowest

EPSON

ES-800C Pro	1195.
Actionscanning	249.

PRINTERS

Apple ColorStyl.	625.
StyleWriter II	295.
Portable Styl.	395.
Pro 630	1350.
Pro 810	4352.
Select 300	495.
Select 310	595.
Select 360	1469.
DeskWriter 560c	565.
D.Writer 1200c	1895.
HP Laser 4M	1875.
HP Laser 4ML	989.
HP Laser 4MP	1377.

Daystar

Turbo 040/40	1219.
Turbo 040i/33	739.
Value 040/40	1225.
Fastcache Qud.	365.
50Mhz powercache	549.
Diskrunner	569.

UMAX

UC630LE	629
UC840	839
UC1260	1095
UC1200SE	2399

MICROTEK

ScanMaker II	487
ScanMaker IIxe	837
ScanMaker IIHR	987
ScanMaker IIG	377
ScanMaker III	2297
ScanMaker IISP	737

SUPERMAC

17T Trinitron	887
20TXL	1777
Pressview 21"	3077
Thunder IIgx 1152	1977
Thunder IIgx 1360	2277
Thunder IIgx 1600	2977

17" Mutliscan $ 675. color

RADIUS

Intelecolor 20	Call
Intelecolor 20v	call.
Precision pro 24x	1395.
Precision pro 24xp	475.
Precision pro 24xk	595.
Precision pro 8xj	495.
Stagetwo rocket	1495.
Videovision studio	3195.
Videovision nubus	1495

FARGO

Premiera Color	847.
Premiera Pro	1287.
Photo Realistic	297.

PLI

Infinity 40	329.
Infinity 88	499.
Infinity 105	539.
Quick SCSI	319.
MiniArray 1gb	2095.
128 IBM optical	1049.
1.3GB Tahiti II	3167.

RasterOps

PaintBoard Turbo	1095
21" Dual mode	2399
Moviepak	1149
DuoMate	399
20/20 Color	1499
20T Multiscan	2489
15" Portrait	399

NEC

3FGE	599
3V	639
4FGE	725
5FGE	1095
5FGP	1225
6FGP	2395
3PG	2245

Software

PageMaker 5.0	477
FreeHand 4.0	317
Office v4.0	397
wordPerfect	99
Photoshop 2.5	497

CIRCLE 508 ON READER SERVICE CARD

Other World Computing

(800)275-4576
M-F 9am - 8pm CST and Sat. 11am-4pm
Internat'l (815) 338-8658
Fax (815) 338-4332
224 West Judd St.
Woodstock, Illinois 60098

We Will Match Your Best Price!
School, Government And Corporate POs Accepted!

Hard Drives

All hard drives include:
- 30mb of ShareWare and System 7.1 installed on every Macintosh drive
- All necessary cabling
- Drive7 award winning SCSI 4.3Formatting Utility
- Internal drives also include the necessary mounting and connecting hardware.

External Drives are mounted in a compact shielded heavy duty aluminum case w/ ultra quiet fan, dual scsi ports, universal 40-Watt power supply and pushbutton external SCSI ID selector.(pictured above 2.25w x 6.5H x 8.25)

- 30-Day Money Back Guarantee
- 2 Year Warranty on Drives From 170-540mb
- 5 Year Warranty on Drives From 540-2160mb.
- All 1/3 height drives will fit internally in any Mac / PowerMac computer produced after the Mac Plus

Quantum®

	Internal	External
170mb. (11ms) 3.5" LPS 1/3 hgt.	$189	$239
270mb. (11ms) 3.5" LPS 1/3 hgt.	$239	$289
340mb.(11ms) 3.5" LPS 1/3 hgt.	$259	$309
540mb. (9.5ms) 3.5" Empire 1/3 hgt.	$489	$539
1440mb. (9.5ms) 3.5" Empire 1/3 hgt.	$849	$899
2160mb. (9.5ms) 3.5" Empire 1/2 hgt.	$1,149	$1,199

Quantum® SPECIALS!

Brand new Quantum 540mb and 1080mb drives in stock and available. Both are 3.5" 1/3rd height

Great for all Macs and PowerMecs!

540mb. LPS (11ms.) $299 $359
1080mb. Empire (9.5ms) $639 $689

Internal includes Drive7 utility software, all necessary cabling and brackets. External drives include necessary cabling and Drive7 SCSI utilities. Warranty 540LPS -2 year / 1080EMP-5 year

Supercharge your PowerMac

The OWC Rocket takes your PowerMac 8100 or 7100 to the blazing speed of 84mhz with a simple no-solder clip that takes less than 5 minutes to install.

Package Includes:
- 80[illegible]
- 800# Tech Support
- 5-Year Warranty and 30-Day Guarantee!

Only $99

Power Macintosh Systems

PowerMac 6100 8/160	$1,645
PowerMac 6100av 8/250 w/CD+	$2,359
PowerMac 7100 8/250	$2,539
PowerMac 7100 8/250 w/CD+	$2,799
PowerMac 8100 8/250 w/CD+	$3,929
PowerMac 8100 16/500 w/SoftWin.	$4,499
PowerMac 8100av 16/500 w/CD+	$4,929

Other PowerMac Configs available call for best PowerMac price. We will meet or beat your best PowerMac price!

Memory Upgrades

4mb. 30 Pin SIMM	$139	$139
4mb. 72 Pin SIMM	$139	$139
8mb. 72 Pin SIMM	$279	$279
16mb. 72 Pin SIMM	$499	N/A
32mb. 72 Pin SIMM	$999	N/A
PowerMac 256k Level 2 Cache	$229	

All memory has a Lifetime Warranty!
Call OWC for all your Mac Memory Needs!

Mass Micro 24-bit NuBus Video Digitizing Card

The QuickImage 24 card [illegible] NuBus equipped Mac [illegible] view and capture 24 bit [illegible] grayscale images [illegible] of NTSC or PAL [illegible] sources, including [illegible] VCRs, videodisc [illegible] cameras via the built [illegible] and S-Video inp[illegible] QI-24's QuickTime Co[illegible] ture 24-30 Frame [illegible] System 7 Sa[illegible]

$69 w/ any other pur[illegible]
$79 purchased sepa[illegible]

CIRCLE 553 ON READER SERVICE CARD

QUANTUM 540MB EXTERNAL $425

Conner 1060MB External (8 ms) SuperFast	$739!
Quantum 20/85MB External	$79/159
Quantum 170/270MB External	$219/299
Conner Powerbook 250mb internal	$299
Conner 340MB External	$329
Seagate 1.2 / 2.1 gig External	$709/1799
Syquest 88/200 External (w/cart!)	$369/569
Syquest 105/270 external (w/cart!)	$349/569
Removable cartridges 44mb $49!	88mb $59!
Compact! case $40 ZFP $42 we carry many cables & connections	

Call About Other Drives **cash prices**

Prices may change without notice
Minimum order may apply

Portable Storage Solutions

1632 Pioneer Way
El Cajon, CA 92020

• 800 • 257 • 1666 Fax (619) 441 • 6999

CIRCLE 449 ON READER SERVICE CARD

KEO!

TECHNOLOGY

Pwrtk 500 Series	8/16/32	349/645/1250	FUJITSU 230Meg MO	945
Duo 200 Series	8/20/28	290/790/1095	TAHITI III 1.3Gig MO	3260
PowerMac	16/32/64	545/1110/2199	128Meg Cartridge	24
2mx8	70ns	75.50	128Meg FMTD Cartridge	28
8mx8	70ns	285	230Meg Cartridge	39
16mx8	70ns	505	650Meg Cartridge	69
256k V-Ram		15	1.2GIG Cartridge	91
512k V-Ram		23	1.3GIG Cartridge	91
			QUANTUM Empire 1GIG HD	820
			QUANTUM Empire 2GIG HD	1322
			PINNACLE 1.3Gig MO	2895

Give us a call for any of your computer hardware needs. We specialize in optical storage products and memory.

REWRITABLE OPTICAL DISK
TOSOH

1-800-937-2366
AUSTIN, TEXAS

Dyna MO

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE • CALL FOR RMA BEFORE RETURNING MERCHANDISE • RETURNS SUBJECT TO A RESTOCKING FEE • ALL BRANDS & PRODUCT NAMES ARE TRADEMARKS OF THEIR RESPECTIVE HOLDERS

CIRCLE 437 ON READER SERVICE CARD

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER®

LOWEST PRICES
BEST SERVICE

POWER PCs
QUADRAS
POWERBOOKS
PRINTERS MONITORS
CALL FOR QUOTES

310-358-9000

FAX 310-358-9100

Dealers & International Orders Welcome
Same Day Shipping in USA

"Best Computer Source"
–Computer Magazine

COMPU AGE

THE SOURCE TO MACINTOSH WORLD
318 N LA CIENEGA • LOS ANGELES, CA 90048

CIRCLE 542 ON READER SERVICE CARD

MAC PROFESSIONAL

We only sell brand new products. No tax outside CA. One year warranty.
19801 Ventura Blvd., Woodland Hills, CA 91364 Dealers & international orders welcome.

(818) 719-9200 We guarantee best pricing. FAX (818) 719-9115

POWER MAC		POWERBOOKS		PRINTERS		MONITORS	
8100 16/250	$3997	520 8/160	$2327	Personal Laser 300	$ 437	14" Plus	$ 297
8100 24/500	$4497	520 8/240	$2497	Peronal Laser 320	$ 897	15" Multi	Call
8100 40/1000	$5097	520 12/320	$2777	Select 310	$ 529	17" Multi	$ 997
8100 72/1.7	$5447	520C 8/160	$2897	Select 360	$1477	20" Multi	$1977
8100 AV 24/500	$4897	520C 8/240	$3077	Laser Pro 630	$1947	**SONY NEC**	
8100 AV 40/1000	$5777	520C 12/320	$3397	Color Stylewriter	$ 597	15 SF	$ 477
7100 8/250	$2547	540	CALL	HP 4ML	$ 987	17 SE	$ 997
7100 16/500	$2997	540C 8/320	$4677	HP 4MP	$1297	20 SE	CALL
7100 40/1000	$3877	540C 12/540	$5097	HP 4M Plus	$1977	3V	$ 477
7100 AV	CALL	Power Port Merc	$ 337	HP 560C	$ 597	5 FGP	$1177
6100 8/250	$1747	**2½ EXTERNAL DR.**		HP 310	$ 297	**SYQUEST / OPTICAL**	
6100 16/250	$1997	40 M8	$ 149	HP Deskwriter	$ 217	88 M8	$ 397
6100 24/500	$2477	80 M8	$ 199	**SCANNERS**		200 M8	$ 547
6100 AV 16/500	$2547	120 MB	$ 249	Nikon Cool Scan	$1847	256 M8	$ 887
6100 AV 24/1000	$3097	160 MB	$ 299	Scan Maker II HR	$ 957	**3½ EXTERNAL DR**	
Soft Window	$ 277	240 MB	$ 369	HP II CX	$ 957	270 M8	$ 277
CD 300i Plus	$ 297	320 M8	$ 499	UMAX 840	$ 877	540 M8	$ 427
256 k Cache	$ 237	520 M8	$ 729	UMAX 1260	$1147	1000 M8	$ 727

Prices Are Subject to Change without Notice. In Business Since 1988.

WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS.
ORDER HOT LINE — 800-BIG-4-MAC

CIRCLE 495 ON READER SERVICE CARD

EXTERNAL DRIVE HOUSINGS

Full Height	145.00
Half Height	89.00
3.5" Mini Housing	89.00
2.5" Pocket Housing	89.00

- Closed or Open Front Bezel
- Includes FWB Software & all necessary cables.
- 110/220 VAC Auto Switching Power Supply
- Full Height Cabinet will hold (2) 3.5" or (2) 5.25" HH Drives

DATAMAX
26212 Dimension Dr. #220
Lake Forest, Ca 92530

800-321-4962
Int'l 714-586-9907
Fax 714-586-6959

MC.VISA.AMEX. GOVT. & UNIVERSITY P.O.'S WELCOME

CIRCLE 552 ON READER SERVICE CARD

Power Macintosh

Your best deal!

Pawer Mac 6100 8/160	1,539
Pawer Mac 6100AV 8/250/CD	2,199
Pawer Mac 7100 8/250	2,459
Pawer Mac 7100AV 8/500/CD	3,379
Pawer Mac 8100 8/250	3,529
Pawer Mac 8100AV 16/500/C	4,699
Quadra 605 4/160	779

PRINTERS		MONITORS	
Stylewriter II	270	14" Plus	279
PLW 320	819	14" RGB	369
PLW 360	1,370	14"AV	558
LW PRO 630	1,961	17"	919
LW PRO 810	4,170	20"	1,849

1 800 404-9976

MAC NET

YOUR NEW FRIENDLY SERVICE

CIRCLE 543 ON READER SERVICE CARD

We Carry New Products Only!

2Free CD's
With Purchase of every CD Based System

To Order Call: 1•800•223•4622

Other Inquires & International Orders:
TEL: 818 · 708 · 6388 FAX: 818 · 708 · 6399

WE install your memory...., internal syquest...., Internal optical...., internal DAT.., and test all components together before shipping your custom configured system.

Free PageMaker 4.2a
with Purchase of a complete system.
PageMaker 5.0 $350 With every PowerMac.
PageMaker 5.0 $250 With every Quadra.
• • • While supplies last • • •

Power Macs 8100, 80MHz

8MB/400 MB HD 3649
(AV)/24/1G HD/Apple CD . 5444
16MB/1Gig HD/Apple CD . 4695
16MB/500MB/SoftWindow 4499
40MB/1Gig/Syquest 200MB/Ext. key 5744
136MB/2.4Gig/SuperMac Press View 21/ CD **12922**
24 bit Color with Display Resolution of 1152 X 870

Power Macs 7100, 66MHz

8MB/250 MB HD 2595
(AV)/16/1G HD/Apple CD . 4299
16MB/500 HD/Apple CD ... 3434
16MB/250MB/SoftWindow 3095
24MB/1Gig/Syquest 88c/Ext. key 4177
40MB/1Gig/Sony 17SE/Apple CD/2mb Vram **5633**
16 bit color with Display Resolution of 832x624
16MB/400mb/Apple 17/Apple CD **4249**

Power Macs 6100, 60MHz

8MB/160 HD/Apple CD 1895
(AV)/16/1G HD/Apple CD . 3344
16MB/500 HD/Apple CD ... 2566
16MB/250MB/SoftWindow 2376
8MB/160HD/Apple Color Plus & CD/Ext. key 2266
8MB/250 HD/NEC 3V/Ext Key (16bit Color) 2377

PowerBooks 520 / 520C — Call for the lowest price

4MB•160 MB HD 2127/2718
8•240•19.2 Modem .. 2988/3539
20MB•320 MB HD ... 3298/3839
12•320•19.2 Modem 3234/3825

PowerBooks 540 / 540C — Call for the lowest price

12MB•240 MB HD ... 3347/4735
8•240•19.2 Modem .. 3572/4960
20MB•320 MB HD ... 3915/5195
12•500•19.2 Modem 4095/5447

DUO 280 / 280C

4MB•240 MB HD 2466/3299
20MB•320 MB HD ... 3377/4122
Duo Dock II 866

PowerBook 150 **NEW**

4MB•120HD•14.4 Modem .... call
8MB•160HD•14.4 Modem .... call
10MB• 240HD•14.4 Modem call

Apple Printers

Select 310/320/360 .. 799/895/1499
Pro 810 / 630 ..... 4650/1999
Stylewriter II/Color 299/595
Portable Stylewriter 405

Apple Monitors, Keyboards

20"/17" Multiscan 1877/988
14" AV/14" plus 659/309
14"/Multiple Scan15" 399/477
Standard/Extended key . 89/169

Quadra 630 **** NEW****

8MB/240MB ..... Call
(AV)20/240MB/16 bit video capturing
Ext Key/scan15" Apple Monitor .. Call

Quadra 950

8MB/230MB/CD 3395
72MB/1GB/CD 5999
128MB/1GB/CD 8222

Quadra 650/660AV

8MB/230MB/CD 2222/1615
16/500/CD 2722/2119
24MB/1GB/CD 3199/2599

Quadra 610/605

8MB/230MB 1648/1299

Quadra 605, 8MB/230/Apple 14" Color Plus/Extended Key

Call for the lowest price on PowerBooks 145B, 160, 165c, 180, 180c

DAYSTAR DIGITAL
DayStar Upgrade Products with PowerPC ROMsFor Quadra 650, 700, 800, 900, 950
66 MHzPowerPro 601 1288
88 MHzPowerPro 601 1899

QMS
Hammer Head 860
11X17 $3495
Ether Brd $495

Kodak
Digital Color Printer
4" x 5 1/2"
450GL 1345

UMAX®
Transparancy Adapter 456
UC630/630 PRO 599/699
UC840 1600DPI W/Photoshop 895
UC1260 1600DPI W/Photoshop 1079
UC1260 1600DPI W/Photoshop LE 965
PowerLook w/transparancy 2899

- All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#
- All Prices are refelected Cash Discount any other method is 2% more
- 6924 CANBY AVE. UNIT #104 RESEDA CA. 91335 • Prices are subject to change without notice

Nikon ELECTRONIC IMAGING
External/Internal 1833/1590

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY®
Sierra 1.3 GB/Cart (19ms) . 2499
Recordable RCD 202 2095
Optical Tahoe 230 W/Cart. 888
Travel Pack (Battery/Charger) 189

radius
Precision 17" Full (1152x870) flat . 1029
Intellicolor 20E / 20VColor .. 1945/1349
2 Page 21GS / Full page ... 979/489
Lemans GT (1024x870) 1795
Precision pro 24XK (1024x768) .. 739
Precision pro 24X (1152x870) .. 1279
Video Vision Studio NuBus 3149

SUPERMAC
Supermac Thunder IIGX Line-up
1152/1360/1600 ... 1994/2449/2999
Spectrum Line-up
Power•1152/24 series V .. 1122/789
8.24 PDQ/Ultura LX 1152X870 .495/1135
Press View 21 (1360x1024) 3049
SuperMatch 21TXL (1600X1200) ... 2020
SuperMatch 20 TXL (1152X870) .. 1929
SuperMatch 17T (1024X768) Flat .. 999
ProvePositve Two Page 12555
Digital Film Delux 2395

HEWLETT® PACKARD
Deskjet 1200c/PS 2188
Laser 4M/4ML/4MP 1895/995/1395
Deskwriter 550c/560c .. 430/579
Deskwriter 520/310 ..... 299/299

NEC
3FGE/4FGE/3V 569/631/477
15" Multi 1024x768 Flat
5FGP (17" Multi 1280x1024 Flat) 1115
6FGP (21" Multi 1280x1024 Flat) 1999
5FGE (17" 1024X768) 1024
4PG (27" 1024X768) 3099

PLI
Infinity 88c/200 Syquest 455/649
Infinity 270 Syquest w/Cart . 649
DAT 10GB DDS2 W/Retrospect 1366

MICROTEK
Better Images Through Innovation.
SCANMAKER
IIG (600DPI 256 Gray) 455
II (600DPI 16.8m Clr w/Photoshop LE) ... 555
IISPX (Software1200X1200, Photosop LE) . 895
IIXE (600DPI 16.8m Clr w/Photoshop) . 866
III (600DPI 68.7m Clr w/Photoshop) .. 2365
Media adapter 495
Slide Scanner 35T (1800DPI) 999

TEXAS INSTRUMENTS
Microwriter PS 23/PS65 .... 695/949
MicroLaser PowerPro 1695

FWB & Storage Dimensions
Disk Array Systems ..... call

NewGen Imager Plus
6L/6L W/Ethernet 3695/3995
ImagerPlus 12 5995

GCC Select Press Printer
600/600 Pro/1200 3595/4595/5799

Exabyte Tape Back-Up

Size	Model	Type	
2 Gig	4200	4mm	$899
4 Gig	4200c	4mm	$1195

Includes: cable, Retrospect, & a Tape

WACOM
ARTZ-Z 6X8 289
12X12 UD/12X18 ..... 499/766

Sony Monitor
15FS/17SE/GDM2038 ..... 455/999/1795

Memory Upgrade
1x8x80 .... $40 2x8x80 .... $77
4x8x80 ... 145 16x8x80 . 588

72 Pin Memory

	80ns	70ns	60ns
8Meg	262	269	276
16Meg	478	488	495
32Meg	975	975	990

PowerBook 520-540C
4MB / 8 MB 189/369
16MB / 32 MB 669/1309

PowerBook Duo 210-280C
(PowerBook 150 also uses Duo simms)
4MB / 6MB / 8MB .. 165/205/291
12MB / 14MB /20MB ... 511/591/931
PB 160-180 -4 /8 /10 ..... 149/329/359

All drives are tested and come with the latest FWB HDT tool kit (SCSI manager4.3) which is 100% PowerMac compatible. All drives come with full factory warranty.

Apple Brand Hard Drives

	Access tim	Interanl	External
160Mb	10ms	125	195
250Mb	10ms	175	249
400Mb	10ms	195	269

Quantum

Empire & Pro Drive

	Access time	Interanl	External
1080mb	9.5ms	699	759
1440mb	10ms	859	919
1800mb	10ms	999	1059
2100mb	10ms	1169	1229

MICROPOLIS
Call for the array system

1.2gb	8ms	$699	$769
1.7gb	10ms	930	999
2.4gb	11ms	1345	1399
3.6gb	11ms	1975	2100
AV Drives			
1.2gb	10ms	769	844
1.7gb	10ms	990	1065
3.6gb	11ms	2065	2177

Seagate

3.5 Low Profile			
1.2gb	10ms	$689	$755
3.5 Half Height			
1.9gb	Barracuda 1 8ms	1299	1359
2.4gb	Barracuda 2 8ms	1395	1459
4.2gb	Barracuda 2 8ms	2485	2545
5.25 Full Hight			
3.4gb	Elite-3 10ms	1949	2133
9gb	Elite-9 11ms	call	Call

SONY(NU-Design) DAT
2-4 GB DDS 336 KB/Sec 959
4-8 GB DDS-2 732 KB/Sec ... 1099

CIRCLE 420 ON READER SERVICE CARD

MACS • PARTS • UPGRADES

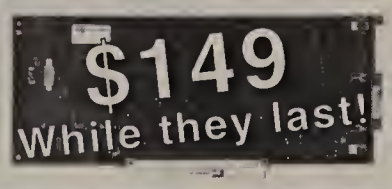
High quality color printing at an affordable price!

$549. NEW

1/2 the cost of similar printers!

Apple Color InkJet Printer

Works on Mac and IBM, 360 dpi, up to 11"x17" paper with *ColorSync* color-matching.



$149 While they last!

E-Machines DoubleColor SX

Accelerated 8-bit video card for Macs

Quadruple your redraw rate!

Clearance Sale!

CD-SC w/Wayzata's "CD Fun House"	$149.
SE Power Supply	99.
LC Power Supply & case	179.
SE Analog Board.	129.
40-Meg Tape Back-up	129.
LaserWriter Plus ROM upgrade	99.
PowerBook 140/170 Battery	49.
ADB Mouse	49.
40-Meg internal for Mac Portable	149.
IIcx/IIci/Quadra/IIxv Power Supply	149.
1200 Baud Personal Modem w/cable	29.
40-Meg 5.25 (Internal Mac II/IIx/IIfx)	49.
Nubus Black & White Video 8d	49.
LC Ethernet Board	49.
CRT & Yoke Assy. (Plus & SE)	49.
Mac Plus Keyboard	59.
Portable 2400 Baud Internal Modem	99.
40-Meg External Hard Drive	169.
Case & Power Supply-Mac II/IIx/IIfx	199.
Classic Power Supply	99.
Personal NT Logic Bd.	179.
Classic Logic 8d	129.
Mouse (Mac Plus)	59.
Plus Power Supply	119.
StyleWriter AC adapter	49.

Printers

ImageWriter I	$169.
ImageWriter II	279.
ImageWriter LQ	449.
StyleWriter	229.
StyleWriter II	239.
LaserWriter IINT	749.
LaserWriter IINTX	899.
Personal LaserWriter LS	349.
Personal LaserWriter NT	649.
LaserWriter Select 310	499.
Apple Color Printer (NEW)	*549.*

All equipment is used or demo unless otherwise stated. Equipment carries a 120-day warranty. Returns subject to a 15% restocking fee. Prices subject to change. Prices represent 2% cash discount.

CPU's & Systems

Mac Plus system	$299.
SE 1/20 system	349.
Classic 4/40 system	549.
Classic II 4/80 system	749.
IISI CPU 5/80	599.
IICX CPU 0/0	699.
IIX CPU 0/0	599.
LC III CPU 4/80	799.
IICI CPU 0/0	799.
Quadra 840av 8/500 cpu (NEW)	2699.
Centris 660av 8/160 (NEW)	1299.
PowerBook 145 4/80	1099.
PowerBook 160 4/80	1299.
Duo 230 4/80	899.

We Buy Macs!

Call 318-424-9791

or fax us at 424-9771

Mac IIvx CPU 4/0

$799. New!

price does not include monitor and keyboard

Monitors

Apple 12" monochrome	$189.
Apple Basic Color	169.
Apple 12" color	229.
Apple 14" Performa Plus (NEW)	299.
Apple 14" Trinitron (NEW)	299.
Apple 16" Trinitron	899.
ArtScan 17" color (NEW)	599.

Street Systems

1200 Marshall St. Shreveport LA 71101

FAX 318-424-9771 • Technical Support 318-424-7987

Customer Service • Purchasing • Info 318-424-9791

Orders Only 800-227-3871

CIRCLE 425 ON READER SERVICE CARD

COMPAQ · Hewlett Packard · radius · Microsoft · Fujitsu · IBM · SuperMac · RELISYS · XANTE

powermac

6100 8/160	$1625
6100 8/250	$1729
6100 8/250 CD	CALL
6100AV 8/250 CD	CALL
7100 8/250	$.2599
7100 8/250 CD	$.2599
7100AV8/500cd	CALL
8100 8/250	CALL
8100 8/250 CD	CALL
8100AV16/500 CD	CALL

SUPERMAC / SONY

17T	$1039
20 PLUS	$1599
20TXL	CALL
THUNDER LIGHT	CALL
THUNDER 24	CALL
SPECTRUMV/pdq+	CALL
CPD 15SF	$485
CPD1730	$1049
1730 SE1	$1199

POWERBOOK

150 4/120	$1395
150 4/250	$1629
520 4/160	$2099
520C 4/160	CALL
540 4/240	CALL
540 12/240 m	CALL
540C 4/340	CALL
540C 12/320M	CALL

APPLE SUPERDRIVE $149

MACROMEDIA DIRCTOR 4.0 $759.00

PRINTERS

LWRITER 360	$1489
LWRITERr 630	$1999
HP 4M+	$1950
HP 4MP	$1395
1200 C/PS	CALL
PJXL300PS	CALL
STYLEWRITERII	$2995
LZR 1580	CALL
QMS 860	CALL

GCC

ELITE 600.	$1325
ELITE 600ET	$1699
SELECT PRESS 600/ 1200	CALL

RADIUS/ NEC

INTELCOLOR 20E	CALL
PRECISION 17	CALL
PC 24X	$1385
PC24XP	CAL

POWERBOOK HD

PB 40/80/HD	$79/149
PB 120/160HD	$215/310
PB 250/340HD	$390/545
POCKET EXT.CS	$85

SCANNERS

UMAX 630LE	$629
UMAX 840	$899
UMAX 1260	$1229
SCANMAKER II SP	$829
SCANMAKER II G	$499
MICROTEK 35T	CALL
HP SCANJET IICX	$995
HP SCANJET IIP	$499
EPSON ES	$1299
RELISYS	CALL

NEW & USED BOUGHT & SOLD

Ask about our EXTENDED WARRANTY

COMPUTER REVELATIONS

Computer Revelations Inc.

1 800 275-9924

in NY 516 737-0800

ALL MACINTOSH, & PCs,

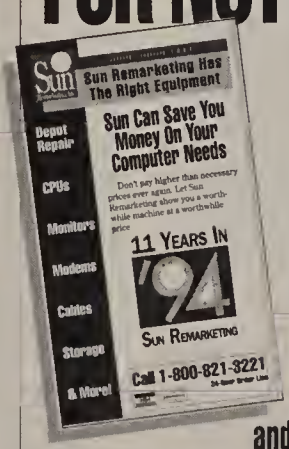
Sales, Leasing, Service & Support

331E DANTE COURT HOLBROOK NY 11741 FAX 516 737-0923

PRICES REPRESENT CASH DISCOUNT

CIRCLE 474 ON READER SERVICE CARD

SOMETHING FOR NOTHING



Free Catalog Of Used Macintosh Computers and Peripherals

While Mac outfits come and go, we just keep on doing what we do best. We've been refurbishing and selling used computers for 11 years. *Your satisfaction is guaranteed with us!*

1-800-SUN-0999

1-800-786-0699

Call Anytime!

PO Box 4059

Logan, UT 84323-4059

International (801) 755-3360

Fax: (801) 755-3311

Sun Remarketing, Inc.

CIRCLE 424 ON READER SERVICE CARD

MacBYTE

SERVING MACUSERS SINCE 1989

Low & High End Custom Setups

Cash for Macs

FAX 310-317-1583

BUY • SELL • TRADE

800-432-2983

Open Monday-Saturday

22775 PCH, Malibu, CA 90265

CIRCLE 428 ON READER SERVICE CARD

Macworld SHOPPER

HOT SHOPPER PRODUCT CATEGORIES **HELP BUYERS FIND THE PRODUCTS** THEY NEED FAST.

WE BEAT ANY PRICE!

MAC TALK

POWER PC

Quadras & Powerbooks

DISPLAYS, SCANNERS

PRINTERS, MODEMS

DEALERS AND INTERNATIONAL SALES OK

800-622-5557

(818)225-9327

FAX

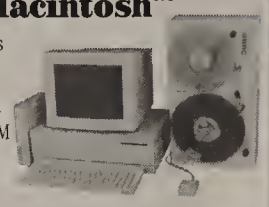
(818)225-8627

22543 Ventura Blvd., Suite 226
Woodland Hills, CA 91364

CIRCLE 540 ON READER SERVICE CARD

9-Track Tape Subsystem For the Macintosh™

Exchange data files between your Macintosh and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-track tape.



Unit can also be used for disk backup. Transfer rate is up to 16 megabytes per minute via your SCSI interface. Subsystem includes, tape drive, software, and complete documentation. For more information call us today!

QUALSTAR®

6709 Independence Ave. • Canoga Park, CA • 91303
818.592.0061 Fax 818.592.0116

CIRCLE 436 ON READER SERVICE CARD

NET • PERIPHERAL REVOLUTION • NET

participate in the death of print ad garbage check out thirty screens of product info on our WWW Server at http://www.loviel.com:3084/ or visit via info@loviel.com
no phone jockey dorks only seasoned mac pros
the net impaired can call 800-688-3696
the finest Macintosh products especially digital video
Serving Corporations, Schools, and Agencies since 1988

APPLE®
RADIUS
SONY
Quantum

http://www.loviel.com:3084/

LOVIEL

Seagate
Micropolis
Adobe
CoSA

CIRCLE 534 ON READER SERVICE CARD

ADVANCED MAC SYSTEMS

TEL: (310) 314-7372
FAX: (310) 314-7512
800 ▪ 847 ▪ 4622

Prices are subject to change without notice

Power Mac		Monitor		Video Card	
6100 8/250	1744	SuperMatch 20TXL	1929	Thunder II GX	2025
6100 8/250-CD	2025	SuperMatch 17T	985	Thunder II LI	1875
6100 AV 8/250-CD	2445	20" Color Plus	1649	Thunder 24	1850
6100 AV 16/500-CD	2735	Sony 1730	965	Spec.24 PDQ+	1195
7100 8/250	2585	Sony 17SE1 Multi	999	Spec. 24 IV	795
7100 40/1GB	4185	NEC 4FGP Multi	649	PrecIClr 24XK	699
7100 AV 8/500-CD	3455	14" RGB Display	399	PrecIClr 24XP	475
8100 AV 24/500	4995	16" RGB Display	929	Pt Bd Turbo	1066
8100 AV 16/500-CD	4865	17" RGB Display	975	Pt Bd Turbo LI	747
8100 24/500-CD	4549	20" RGB Display	1985	**PLI**	
8100 16/500/Win	4499	Two Page 20GS	799	Infinity 88C	469
8100 40/1.2GB/CD	6325	ViewSonic 17, 17"	999	Infinity 270	649

Quadra		Powerbook		Printer		Scanner	
650 8/230	1989	520 8/160	2295	LaserWriterSelect 320	885	UMAX UC1260	1185
650 8/230-CD	2275	520C 8/160	2895	LaserWriter Select 360	1425	UMAX UC630	747
650 24/500-CD	3095	540 8/240	3195	LaserWriter Pro 630	1965	UMAX UC840	985
840 AV 8/230-CD	2989	540C 4/320	4185	LaserWriter Pro 810	4425	HP ScanJet IICX	949
840 AV 16/500-CD	3525	540C 12/320/Modem	4995	StyleWriter Pro	595	**PPC Upgrade**	
840 AV 32/1Gb-Cd	4399	150 4/120	1389	StyleWriter II	275	6100/60/AV	1395
950 8/500	3195	180 4/80	1924	HP LaserJet 4M Plus	1989	7100/66/AV	1695
950 16/1Gb	4085	180C 4/160	2650	HP DeskJet 1200c/PS	2045	8100/80/AV	1995

CIRCLE 470 ON READER SERVICE CARD

PRICE BREAKERS

72 DPI
WYSIWYG

MITSUBISHI COLOR MONITOR

FG6601	$345.00
CRT Size	16"/15" View
Resolution	832 x 624
Dot Pitch	0.26mm
Colors	Millions

The Video Works
25 Beta Ct, San Ramon, CA. 94583
800-838-1031

CIRCLE 403 ON READER SERVICE CARD

Fall Memory Specials

MAC MEMORY - 30 PIN

1x8 - 100	$39
1x8 - 80	$41
2x8 - 80	$79
4x8 - 80	$136
8x8 - 80	$359
16x8 - 80	$599

PC MEMORY - 30 PIN

1x9 - 70 3 chip	$42
1x9 - 70 9 chip	$47
4x9 - 70	$159
16x9 - 70	$709

PC MEMORY - 72 PIN

1x3670	$176
2x3670	$352
4x3670	$638

Also AST, Compaq, Epson, HP, IBM, TI, Toshiba and all laser printer memory upgrades.

MAC MEMORY - 72 PIN

1x3270/60	$144/149
2x3270/60	$289/299
4x3270/60	$539/585
8x3270/60	$1099/1198

POWER PC MEMORY

8meg Kit	$288
16meg Kit	$578
32meg Kit	$1078
64meg Kit	$2198

VRAM

256 k VRAM	$22
512 k VRAM	$34

Also VRAM for Power PC's

SYQUEST

Memory Direct 88C	$399 (Ext)
Iomega 44	$58
Iomega 88	$84

POWERBOOK

520, 520c, 540, 540c

4meg	$209
8meg	$359
16meg	$735
32meg	$1475

	140/170	160/180	165c/180c	Duos
4mb	159	169	165	195
6mb	219	239	239	256
8mb	—	299	309	329
10mb	—	362	369	—
12mb	—	—	—	529
14mb	—	—	—	699
20mb	—	—	—	949

VIDEO CARDS

Radius Precision Pro 24XP	$429
Rasterops 24SX	$289
Rasterops Movie Pak	$1399

Same Day Shipping
Educational, Corporate and Government
P.O.'s Welcome
We accept AMEX, VISA, MASTERCARD & DISCOVER

800-989-6348

7921 Professional Circle
Huntington Beach, CA 92648
FAX - 714-842-9437
7am - 6pm Monday - Friday P.S.T.
Lifetime Warranty on all memory products
Prices subject to change without prior notice

714-848-5958

MEMORY DIRECT!

Items $ [illegible] RMA numbers are required for all returns. All [illegible], refused or non-defective returns will be subject to a 15% restocking [illegible].

CA$H FOR YOUR USED MEMORY

GREEN MEMORY 714•842•1227

18685 MAIN STREET #607, HUNTINGTON BEACH, CA 92648

CIRCLE 516 ON READER SERVICE CARD

MEMORY TRADERS

WE BUY USED MEMORY

WE WILL BE AT MACWORLD TORONTO, BOOTH 1715 & APPLE EXPO LONDON, UK. BRING YOUR S!MMS!

NO HIDDEN CHARGES!
VISA/MC - NO EXTRA CHARGE
PRICES INCLUDE SHIPPING
LIFETIME WARRANTY

256K
512K
1MB
2MB
4MB
8MB
16MB
32MB
VRAM
IIFX SIMMS
PB 2MB-10MB

7215 Arlington Road, #202
Bethesda, MD 20814
Ph: 301-215-7807
FAX: 301-907-7542

WORKING OR BROKEN
ANY QUANTITY
ANY SPEED

800-315-7807

WE SELL NEW MEMORY

CIRCLE 409 ON READER SERVICE CARD

TAKE YOUR MAC TO THE MAX®

THE BIGGEST SPEED INCREASE FOR YOUR MONEY.
As seen in MacWorld, March 94.

20% to 30% SPEED INCREASE

	Self Installable Kit	Installed
MAX™ IISI	$29*	$89
MAX™ QUAD 700, 900, 950	$99*	$159
MAX™ 040	$99	$159
MAX™ POWER PC	$139	$199

* Some soldering required

LOW PROFILE DESIGN WILL NOT INTERFERE WITH CARDS

Compatible with the following:
IIsi, Centris - 610, 650
Quadra - 700, 900, 950
Quadra - 610, 650, 800
Power PC - 6100/60, 7100, 8100/80.

MACEXPERTS™ INC

AFFORDABLE UPGRADE SOLUTIONS
1511 LINCOLN BLVD, SANTA MONICA, CA 90401

1(800) 392-1234
(310) 394-1223 FAX (310) 394-7323

CIRCLE 435 ON READER SERVICE CARD

PERIPHERAL 800 256-6581

Call now! We have all sizes of memory for the new Blackbird PowerBooks!

Standard SIMMs

1 Megabyte	from 35.00
2 Megabyte	75.00
4 Megabyte	137.00
8 Megabyte	299.00
16 Megabyte	559.00

Video RAM

4 Bit to 8 Bit Upgrade (Mac II/IIx cards)	24.00
256K Quadra 700/900, Performa 46X VRAM	18.00
256K Quadras, LC 520 VRAM	19.00
256K Centris, LCIII, Performas VRAM	19.00
512K VRAM for LC, LCII, IIvx, IIvi, DuoDock, and Performas	36.00

68882 FPU Boards

25 MHz for Macintosh LC	55.00
20 MHz w/2 slots for Mac IIsi	119.00
25 MHz for Mac Classic II	55.00

Cache Cards, Etc.

128K Cache Card for LCIII and Performa 450	159.00
w/25 MHz FPU	209.00
IIsi 64K Cache Card	159.00
IIci 64K Cache Card	125.00
IIsi 2-slot Card and 68882	119.00

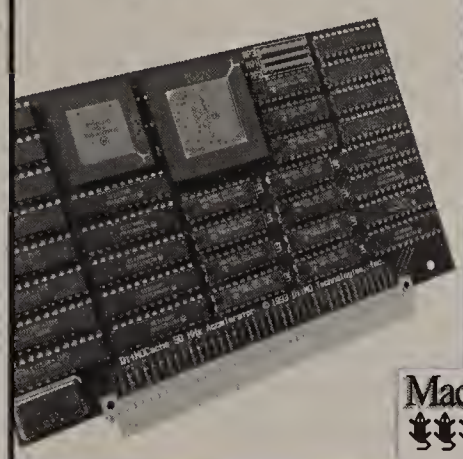
Math Coprocessors

68882 16 MHz FPU	39.00
68882 20 MHz FPU	45.00
68882 25 MHz FPU	49.00
68882 33 MHz FPU	59.00
68882 50 MHz FPU	99.00
68881 16 MHz FPU	45.00

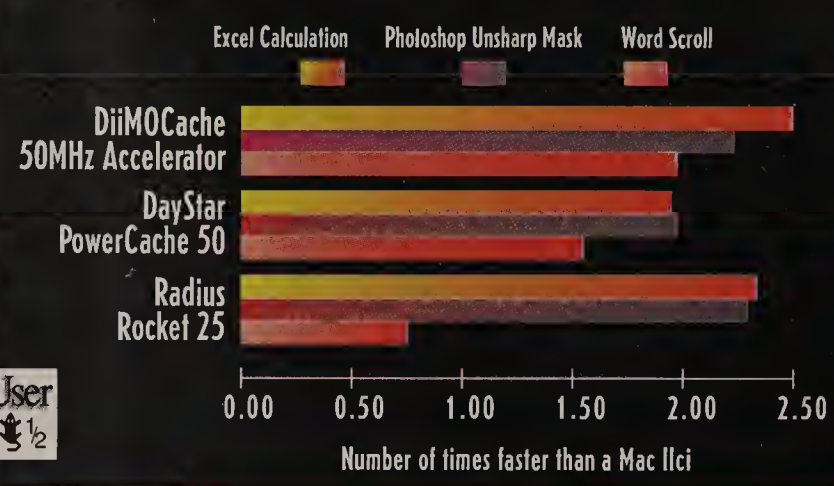
Miscellaneous

LaserWriter Pro 810 4 MB upgrade	275.00
LaserWriter Pro 810 8 MB upgrade	499.00
T.I. MicroLaser 1 MB	49.00
Mac Classic 1 MB Board	75.00
68851 16MHz PMMU	89.00
if requested, MODE 32 software included free w/PMMU	
Mac Portable 3 MB Card	369.00
Mac Portable 4 MB Card	399.00
Mac Portable 5 MB Card	449.00

DiiMOCache 50MHz Accelerator $445



MacUser ★★★★½



We will buy your old memory at great prices! Call for details.

Speed up everything you do by up to 400% with this 50MHz 68030 accelerator by DiiMO Technologies. Awarded 4 1/2 Mice in MacUser's April 93 Accelerator Review, the DiiMOCache 50MHz 68030 Accelerator outperformed not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. And it costs less too! For the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvx, IIvi, IIsi, SE/30, and Performa 600 and 400 series. Call for adapter prices.

DiiMOCache 50MHz 68030 Accelerator

without FPU $445.00 with FPU $519.00

PowerBook 500 series *Blackbird* Memory

4 Megabyte upgrade	215.00
8 Megabyte upgrade	379.00
16 Megabyte upgrade	775.00
24 Megabyte upgrade	1145.00
32 Megabyte upgrade	1475.00

72 Pin Memory *for the new Macs!*

	80ns	70ns	60ns
4 Megabyte			
8 Megabyte			
16 MB-Non Composite			
32 MB-Non Composite			

Prices Changing — Call for Best Prices!

PowerBook Memory

	100	140/170	160/180	165c/180c	Duos
2 MB	89.00	89.00	---	---	---
4 MB	155.00	137.00	137.00	137.00	179.00
6 MB	235.00	199.00	199.00	199.00	---
8 MB	---	---	265.00	265.00	315.00
10 MB	---	---	309.00	335.00	---
12/14 MB	---	---	---	---	569/649
20/28 MB	---	---	---	---	949/1265

Newton PDA Upgrade Products

512K Static RAM Storage Card	125.00
1 Megabyte Static RAM Storage Card	169.00
2 Megabyte Static RAM Storage Card	289.00
2 Megabyte Flash Storage Card	259.00
4 Megabyte Flash Storage Card	425.00
8 Megabyte Flash Storage Card	749.00
16 Megabyte Flash Storage Card	1375.00

68040 PROCESSOR W/FPU AS LOW AS **$249.00**

(25MHz, W/NON FPU TYPE PROCESSOR TRADE IN) $299.00 W/OUT TRADE

FOR THE CENTRIS/QUADRA 605, 610, 650, AND 660AV, AND THE PERFORMA 475/476 AND LC 475.

33MHz FOR QUADRA 650 & LC 575 — $399.00

40MHz- $699.00 Heat Sink- $19.00

TOLL FREE TECH SUPPORT

LIFETIME WARRANTY ON ALL MEMORY PRODUCTS

ORDER BY 6:30 PM CST FOR SAME DAY SHIPPING*

OVERNIGHT DELIVERY FROM $8.00 *some restrictions apply

PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820

405/332-6581 FAX 405/436-2245 • AppleLink-PERIPHERAL

HOURS: Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM

Due to volatility in the market all prices and availability are subject to change without notice.

CIRCLE 454 ON READER SERVICE CARD

Xtra REASONS TO BUY FROM MAC Xtra...

MEMORY UPGRADES

1X8X80	$37
2X8X80	$75
4X8X80	$133
4X8X80 II/IIX	$155
16X8X80 (Low Profile)	$619
1X8X80FX	$42
4X8X80FX	$155
16X8X80FX	$629
4MB 72Pin(70NS/ 60NS)	$145/$149
8MB 72Pin(70NS/ 60NS)	$289/$297
16MB 72Pin(60 NS)	$535
32MB 72Pin(60 NS)	$1115

MAC XTRA'S

PowerPC Cache 256k	$255
FPU LC/LCII/LCIII	$49/$48
FPU Clasic II	$55
FPU Color Classic	$48
FPU Duo Dock/Performa 600	$59
FPU/CPU 040 25Mhz	$299
VRAM 256K / 512K	$20/$38

POWERBOOK UPGRADES

PB 520-540C 4MB/8MB	$197/$399
PB 520-540C 16MB/32MB	$795/$1565
PB 140-170 4MB/6MB	$139/$209
PB 160-180 4MB/6MB	$135/$205
PB 160-180 8MB/10MB	$269/$329
PB 165C-180C 4MB/6MB	$139/$229
PB 165C-180C 8MB/10MB	$299/$335
PBDUO 4MB/8MB	$175/$335
PBDUO 12MB/14MB	$535/$592
PBDUO 20MB/28MB	$930/$1429
PowerBook Tool Kit	$6.50

SYQUEST MEDIA

44MB 1-4/5-9/10+	$59/$58/$57
44MB Pre-Formated	$65
88MB 1-4/5-9/10+	$69/$68/$67
88MB Pre-Formated	$75
200MB 1-9/10+	$79/$77
105MB 1-9/10+	$62/$60
270MB 1-9/10+	$65/$63

MODEMS

Prometheus

Powerbook 14.4 Int.	$244
Powerbook Home Office 14.4 Int	$279
Home Office 14.4E Ext.	$210

Zoom

Zoom AMX 2400	$62
Zoom FXV 2400/9600 S/R Fax	$116
Zoom VFX 14.4 v.32bis S/R Fax	$169

Hayes

Accura 144+Fax 14.4 Mac	$164
Optima 144+Fax 14.4 Mac	$403
Optima 144+Fax 14.4 Pocket	$303
Optiam 288 V.FC+FAX Mac	$449

US Robotics

Sportster 28.8 Mac & Fax	$232
Sportster 14.4 Mac & Fax	$152
Sportster 2400 Mac & Fax	$135

ACCESSORIES

Wacom

6x8 ARTZ ADB UD-Series Tablet	$299
12x12 UD-Series Tablet	$498
12x18 UD-Series Tablet	$761
18x25 SD-Series Standard Surface	$2,561
Cordless Non-Pressure Sens. Stylus	$52
4 Button Cursor for UD 12x12	$104

Targus

Premier Leather Case 17x4x13	$142
Business Travler Leather Standard	$177
Premier Leather Case 14.5x2.5x12	$118
Leather Notebook Black/Burg./Tan	$83
Prestige Black/Burg./Tan 15x11x2	$200

PRINTERS

SuperMac

Proof Positive full Page Color	$6,805

Hewlett Packard

Deskwriter C/560C (Color)	$407/$604
Deskwriter 310/520 (Mono)	$307/$382
Call for HP Printer Supplies	CALL

Texas Instruments

MicroWriter Basic L.E.D. 5ppm	$524
PS23/65 L.E.D. 5ppm A4	$694/$960
PRO PS23/65 8ppm	$1,398/$1,572

NETWORKING

Dayna

DaynaPort Pocket SCSI/Link-T	$231
DaynaPort SCSI/Link	$247
DaynaPort SCSI/Link Powerbook-T	$266
DaynaPort TRX (Friendly Net Adptr)	$54
DaynaPort E/II-T Nubus	$104
DaynaPort E/LC-T Mac LC Card	$88
DaynaPort E/SE-T Mac SE Card	$143
DaynaPort E/SI30-T Mac IISI/SE/30	$143
DaynaStar Mini Hub 5 10Base T	$140
DaynaStar Mini Hub 10Base T	$193

Farallon

EtherWave Nubus Card	$99
EtherWave LC Card	$99
EtherWave Mac Powerbook Adapter	$278
EtherWave Printer Adapter	$278
EtherMac LC-C	$170
EhterMac LC-10T	$84
PhoneNet Connecter	$28

ACCELERATORS

Daystar Turbo 040 33Mhz W/Cache	$795
Daystar Turbo 040 40Mhz W/Cache	$959
Daystar Turbo 040 128kCache	$165
Daystar 030 33/33 w/FPU	$275/$357
Daystar 030 50/50 w/FPU	$415/$537
Daystar PowerPRO Cards	CALL!

VIDEO CARDS

Radius

Precision Color 8XJ Nubus	$461
Precision Color PRO 24XK Nubus	$768
Precision Color PRO 24XP Nubus	$461
Full Page Display/ GS 15" Mono.	$296
PhotoBooster for Rocket	$615
PhotoBooster 68040-66	$768

SuperMac

Spectrum/24 Series V Nubus	$850
Spectrum/8.24 PDQ Nubus	$510
Spectrum/8 Series III Nubus	$382
Video Spigot Nubus 24bit-DAC	$382
Video Spigot Mac LC 24bit-DAC	$243
Thunder II Light Nubus 1152x870	$1,701

DRIVES

Xtra Drives

SyQuest 44/88MB w/Cart.	$289/$409
SyQuest 200MB w/Cart.	$539
SyQuest 105/270MB w/Cart.	$429/$559
128MB Optical 30ms w/5 Disks	$995
CD-Rom Photo CD 2x	$259
8GB DDS/2 Dat	$1209

MicroNet

Int/Ext 170MB Fast SCSI-2	$264/$288
Int/Ext 270MB Fast SCSI-2	$302/$337
Int/Ext 340MB Fast SCSI-2	$347/$382
Int/Ext 1GB Fast SCSI-2	$940/$976
External 2.7GB Fast SCSI-2	$2,932
Int/Ext 128MB Optical Drive	$904/$1,184

XTRA MEDIA

Verbatim

Verbatim 128MB Optical	$30
Verbatim 650 Optical	$79
Verbatim 1.3GB Optical	$105
Verbatim RCD (for RCD Drives)	$20

Komag

Komag 128MB Optical	$28
Komag 600MB Optical	$79
Komag 1.3MB Optical	$99

Samsung

Samsung 128MB Optical	$30
Samsung 650MB Optical	$79

MONITORS

Radius

Precision Color 17" Multiscan	$1,075
Precision Color 20" 20V	$1,417
Precision Color 21"	$2,110
Full Page Display 15" Mono.	$455

NEC

5FGE 17" Multiscan .28	$1,036
3FGE 15" Multiscan .28	$594
4FGE 15" Mutliscan .28	$652

SuperMac

SuperMatch 17T 17" .28	$1,063
SuperMatch 17XL 17" .28	$1,020
SuperMatch High Res 20"	$2,763
SuperMatch 21T XL 21"	$2,257

1075 Bellevue Way N.E. Suite 114
Bellevue, WA 98004 • Phone: (206) 455-0786
Fax your order 24 Hours a day! (206)455-3448

- MasterCard, VISA & Discover NO Surcharge
- Prices subject to change
- Returns subject to approval & restocking fee.

7:00 AM - 6:00 PM M-F & 9:00 AM - 4 PM Sat - PST

Overnight Delivery - $7 and up / UPS Ground - $6 and up

1-800-553-4230

CIRCLE 561 ON READER SERVICE CARD

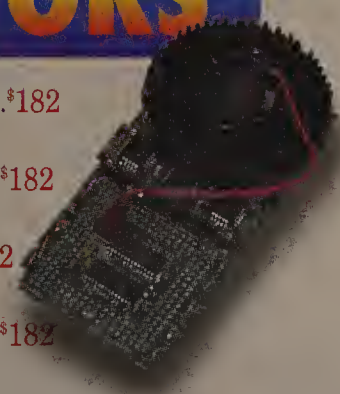
NEWER HABITAT
A Division of The LLB Habitat

Authorized Resellers of Newer™ TECHNOLOGY

Why buy NEWER products?

- ✔ Great prices for high quality products
- ✔ Lifetime warranty on all memory products
- ✔ Knowledgeable and friendly sales advisors
- ✔ All products U.S. manufactured
- ✔ Every unit individually tested
- ✔ Detailed instructions for installation

ACCELERATORS



Variable Speed Overdrive–Quadra 700/90.....$182
Speeds processor up to 30MHz

VSO–Quadra 950.....$182
Speeds processor up to 40MHz

VSO–IIfx.....$182
Speeds processor up to 50MHz

VSO–IIsi.....$182
Speeds processor up to 31MHz

Quadra Overdrive (Centris 650, 610, Quadra 610, 700, 900, 605).....$839
Doubles processor speed to 50 MHz for up to 200% speed increase (Centris 610 up to 40MHz) as well as math functionality

Quadra Overdrive+ (Centris 650, 610, Quadra 610, 700, 900, 605.....$1,009
Combines the Quadra Overdrive with 128K high speed cache

ACCESSORIES

PowerExtend–Nubus.....$240
Super high speed RAM drive of up to 256MB in the Quadra 840AV computer. Complements high-end graphic imaging software.

SCSI-II Dual-Solid-state storage system.....Call for prices

Power MacCache.....$216
256K level 2 Cache raises the 6100/7100 performance to a new height to maximize productivity

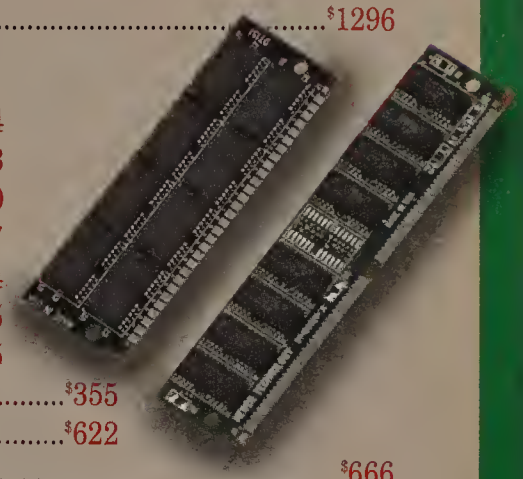
MEMORY

Power Mac, Centris, Quadra, LC III, Performa

32-bit Memory Newer TECHNOLOGY

4MB–70ns/4MB–60ns.....$168/$172
8MB–70ns/8MB–60ns.....$328/$336
16MB–80/70/60ns.....$631/$645/$672
32MB–70ns/32MB–60ns.....$1282/$1333
16MB–70ns (LC III).....$652
32MB–70ns (LC III).....$1296

8-bit Newer TECHNOLOGY



1x8x70.....$44
2x8x70.....$93
4x8x70.....$150
4x8x70 (II,IIx).....$167
4x8x70 (IIfx).....$174
8x8x70.....$355
8x8x70 (IIfx).....$355
8x8x70 (Radius Rocket).....$355
16x8x70.....$622
16x8x70 (IIfx).....$666
16x8x70 (Radius Rocket).....$672

VRAM Newer TECHNOLOGY

256K VRAM.....$22
512K VRAM.....$55

PRINTER MEMORY Newer TECHNOLOGY

Laserwriter 810–4MB.....$239
Laserwriter 810–8MB.....$429

POWERBOOK

POWERBOOK MEMORY Newer TECHNOLOGY

PB100–2/4/6.....$80/$220/$308
PB140/145/170–2/4/6.....$80/$136/$191
PB160/165/80–2/4/6/8/10.....$72/$128/$185/$241/$298
PB165/180c–2/4/6/8/10.....$79/$156/$233/$322/$410
PB520–540c–4/8/16/32.....$202/$407/$803/$1575
PB210–280c–8/12/20/28.....$413/$593/$935/$1435
Base Module–4/12.....$224/$742
Upgrades for Base Modules–4/8/16

POWERBOOK ACCESSORIES

SCSI MicroDock.....$132
Docking station for PowerBook Duos, allows SCSI devices to be attached

Color MicroDock.....$252
Docking station for PowerBook Duos to add color monitor, keyboard and speakers

Ethernet MicroDock.....$192
PowerBook Duos can quickly and easily be attached to networks

PowerAssist Battery Extender.....$47
Supplements DC power with AC for up to 4x longer usage from each charge

NEWER HABITAT
A Division of The LLB Habitat

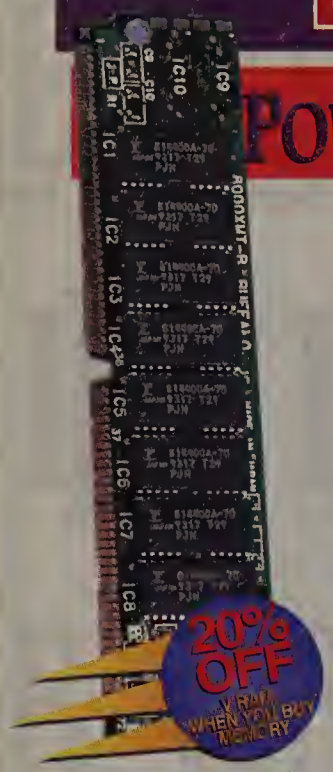
300 120th Avenue NE
Bldg. 1, Suite 120
Bellevue, WA 98005
(206) 454-7258
FAX (206) 454-7302

- **Airborne Express Overnight $6 and up**
- First quality brand new products
- P.O.'s accepted upon approval
- All major credit cards accepted– No surcharge
- Credit card not charged until order is shipped

- Orders received before 7:30 pm EST weekdays shipped same day
- We export to most countries in the world
- All returns require approval and are subject to a restocking fee
- Prices subject to change– Not responsible for typographical errors
- Open 7 am to 6 pm M–F. 9 am to 4 pm Saturdays
- No sales tax except applicable sales tax in WA

Call 1-800-840-2212

THE LLB COMPANY INC.



POWERPC MEMORY $145

POWERPC, CENTRIS, QUADRA, LC III

4MB-70ns / 4MB-60ns	$145 / $149
8MB-70ns / 8MB-60ns	$294 / $298
16MB-60ns non-composite	$539
32MB-60ns	$1199

STANDARD 30 PIN MEMORY

1x8x80	$37	4x8x80 (IIfx)	$155
1x8x70	$39	4x8x70 (IIfx)	$157
1x8x100	$35	4x8x80 (II,IIx)	$155
2x8x80	$73	4x8x70 (II,IIx)	$157
2x8x70	$75	8x8x70 (IIfx)	$349
4x8x80	$135	16x8x70 (Low Profile)	$625
4x8x70	$137	16x8x70 (IIfx)	$635

PRINTER MEMORY

LaserWriter 810 4MB / 8MB	$309 / $549
HP 4, 4m 4MB / 8MB	$179 / $339
TI PS17+35 1MB	$56

4MB 60ns 72 pin SIMM $145

VRAM Offer is for a Limited Time.

POWERBOOK MEMORY

PB140-170-4/6	$142 / $209
PB160-180-4/6/8/10	$139 / $199 / $272 / $324
PB165C-180C-4/6/8/10	$155 / $232 / $319 / $405
DUO 210 - 280C 4/8/12	$172 / $315 / $535
DUO 210 - 280C 14/20/28	$595 / $932 / $1430
PB 520 - 540C 4/8/16/32	$199 / $405 / $7999 / $1569

POWERBOOK ACCESSORIES

Battery Charger / Conditioner	$75
Long Life Battery 140-180c	$59
AutomobileAdapter 100-180 / DUO	$69
Newer Technology DUO Micro Dock SCSI / Color	$135 / $259
Rasterops Duomate 8 / 16 SC	$269 / $559

VIDEO RAM / FPU'S ETC...

Video RAM 256K / 512K	$20 / $38
16MHz LC or Color Classic	$49
16MHz Classic II	$59
25MHz LC III	$49
35MHz Performa 600 / Duo Dock FPU	$65
Centris FPU	$299
MicroMac SIMMdoubler / SIMMchanger	$137 / $98

We have a Lifetime Warranty on all our memory products. Prices and availablity are subject to change without notice.

MEDIA

SONY

1.3 / 1.2GB Optical	$99
650 / 600MB Optical	$89
128MB/230MB 3.5" Optical	$36/$49
SONY Floppy Disks	
3.5" DD / 3.5" HD	$7/$10.50
3.5" HD Pre-Formated	$12
SONY CD-R	
650MB/74 Min.	$20
553MB/63 Min.	$19
SONY 4mm DAT	
4MM 60M 1.3GB	$12
4MM 90M 2GB	$13.50
4MM 120M 4GB	$24
Cleaning Cartridge	$12.50
SONY 8mm DAT	
8MM 15M 600MB	$11
8MM 54M 2.4GB	$13
8MM 112M 5GB	$15
Cleaning Cartridge	$28

OTHER MAC NEEDS

Action 2-Button ADB Mouse	$45
Datadesk Mac 101 Keyboard	$120
Keytronics Keyboard 101	$129
Kensington Turbo Mouse	$106
Costar Stingray Turbo Mouse	$85
Port Juggler Serial Switch	$75
Wacom ARTZ Tablet	$315
Wacom 12 x 12 Digitizer	$689
Compact Mac Tool Kit/PB Tool Kit	$8 / $7.50
SIMM Remover (30 pin only)/Grounding Strap	$3/$1.50
Modem Cable/High-Speed Hand Shaking	$7.50 / $12
Printer Cable DIN-8 to DIN-8/DIN-8 to DB-25	$7.50
Newer Technology VSO Q700/900/950/IIFX	$170
Wrist Saver Keyboard or Mouse Pad/Bundle	$12/$20
SCSI Cables M25-M50 18"/M25-M50 6'	$8 / $19
SCSI Cables M50-M50 18"/M50-M50 6'	$9 / $19

SYQUEST 270MB CARTRIDGES $65

SyQuest 44MB Cartridge 1-4/5-9/10+	$59 / $58 / $57
Pre-Formatted	$65
SyQuest 88MB Cartridge 1-4/5-9/10+	$69 / $68 / $67
Pre-Formatted	$75
SyQuest 105MB Cartridge 1-4/5-9/10+	$62 / $61 / $60
SyQuest 200MB Cartridge	$79
SyQuest 270MB Cartridge 1-4/5-9/10+	$65 / $64 / $63

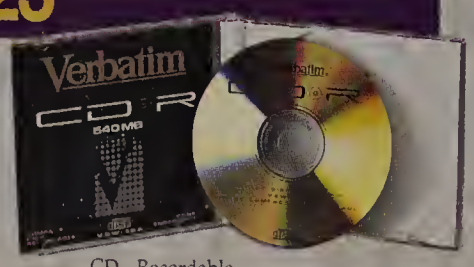
MODEMS

Supra v.32bis S/R Fax 14.4 w/ C & S $225

Supra v.32bis S/R Fax 14.4 w/ C & S	$225
Supra V Mail Upgrade (V.32 bis $225 model)	$89
Supra v.32bis S/R Fax 14.4 LC w/ C & S	$139
Supra 2400 Modem w/ C & S	$59
Supra 2400 Modem S/R Fax 9600 w/ C & S	$139
Supra v.32bis PowerBook 14.4	$229
Supra 28.8 External w/ C & S	$325
Global Village OneWorld Fax 1 line / 2 line	$859 / $1299
Global Village OneWorld Remote Access Server-2	$1639
Global Village Teleport or Powerport (Bronze)	$97
Global Village Teleport (Gold) 14,400	$232
Global Village Powerport (Gold) 14,400	$279
Global Village Teleport (Mercury) 19,200	$289
Global Village Powerport (Mercury) 19,200	$329
Mercury for Duo 2xx/PB5xx	$339/$329
U.S. Robotics Sportster 14.4 S/R Fax	$169
Prometheus PowerBook 14.4 w/Voice	$309
Zoom Pocket 14.4 w/Voice	$239
Zoom 14.4 w/Voice	$189
Zoom V. fast 28.8 modem	$249

VERBATIM AS LOW AS $23

128MB 3.5" Optical	$30
128MB 3.5" Optical, Apple Format	$36
230MB 3.5" Optical	$49
600 / 650MB 5.25" Optical (512 b/s / 1024 b/s)	$79
1.2 / 1.3GB Optical (512 b/s / 1024 b/s)	$105
DC2000 with QIC40	$14.90
DC2080 with QIC30	$16.90
DC2120 with QIC80	$19.50
4mm 90m / 60m	$11.50 / $8.90
8mm 112m	$10



CD - Recordable 640 / 74 min $20

(For use in Recordable CD-ROM Drives)

WE ALSO CARRY FARALLON & DAYNA NETWORKING PRODUCTS, CABLES, PRINTER SUPPLIES, KEYBOARDS, MICE, SCANNERS..... CALL US TODAY

FAX 206-454-7302 Educational/ Government 1-800-848-1424 Fortune 1000 Companies 1-800-848-1418

CIRCLE 563 ON READER SERVICE CARD

YOUR MEMORY STORE & MORE...

SYQUEST DRIVES ONLY $289

105MB SyQuest $399

88c (R/W 44) SyQuest $409

Rumi SYQUEST DRIVES

Rumi 44MB SyQuest *(FREE Cartridge)*	$289
Rumi 88c (R/W 44) SyQuest *(FREE Cartridge)*	$409
Rumi 105MB SyQuest *(FREE Cartridge)*	$399
Rumi 200MB SyQuest *(FREE Cartridge)*	$539
Rumi 270MB SyQuest *(FREE Cartridge)*	$559

Rumi ..... $259 CD-ROM DRIVE

•Doublespeed, Multisession Photo CD. NEC CDR Mechanism.

Rumi CD-ROM DRIVE BUNDLE! $509

CD-ROM Bundle Includes RUMI CD-ROM Drive, Sony Speakers and 4 CD Titles $509

•World Atlas •Myst •Lunicus
•Where in the World is Carmen Deluxe

Rumi DAT DRIVES

Rumi 2.0GB DAT Drive w/Retrospect (Includes Tape)	$1069
Rumi DDS / 8.0GB w/Retrospect (Includes Tape)	$1209

Rumi OPTICAL DRIVE

128MB Optical Drive
Double Speed
with TEAC Mechanisam

5 VERBATUM CARTRIDGES FREE $995

Rumi HARD DRIVES

Rumi 85MB Internal	$209
External (Quantum)	$279
Rumi 170MB Internal	$219
External (Quantum)	$299
Rumi 270MB Internal	$289
External (Quantum)	$339
Rumi 525MB Internal	$545
External (Quantum)	$619
Rumi 1.0GB Internal	$879
External (Quantum)	$939
Rumi 1.2GB Internal	$1089
External (Quantum)	$1109
Rumi 2.0GB Ext (Seagate Barracuda)	$2269
Rumi Powerbook 210 Int (Toshiba)	$369

MORE DRIVES

PMO Tahoe 230MB Optical	$979
PMO Sierra 1.3GB Optical	$2789
PMO Sierra 2.6GB Optical	$5759
PMO RCD 202 Recordable CD-ROM	$2449
PLI Quick Array 1GB 040 Internal	$1869
PLI Quick Array 1GB	$2078
PLI Quick Array 2GB	$2811
PLI 128MB Optical (Sony Mech)	$1147
PLI 10Gg Dat Drive	$1459

SCANNERS / PRINTERS

HP IICX	$999
HP IIP	$799
UMAX UC630 PS/LE	$649
UMAX UC840	$969
UMAX 1260 PS/LE	$1099
Microtek ScanMaker IIG	$489
Microtek ScanMaker IISP	$799
Microtek ScanMaker IISPX	$949
Microtek ScanMaker II	$685
Microtek ScanMaker IIHR	$1099
Microtek ScanMaker 35T	$1389
Nikon Coolscan	$2039
Citizen Notebook II Color Printer	$378
Notebook II Ni-cad Battery Pak	$69
Labelwriter II XL	$240
HP DeskWriter	$199

HEWLETT® PACKARD

HP Deskwriter Printers Now Available

NETWORKING

SONIC

Sonic Ether 10T/Thin-II/LC	$92
Sonic Micro SCSI PowerBook	$237
Sonic FriendlyNet 10T/Thin	$53
Sonic Starbase T9	$198
Sonic HubLite 5 port	$145
Sonic PowerBridge	$92

ASANTE

Asante Friendly Net Adapters	$59
Asante Mac Con-i Nubus 10T	$159
Asante Mini EN-SC 10T PB	$259
Asante Net Extender Hub 10-T	$179
Asante Mac Con-i LC Series T	$159
Asante SCSI w/Thick/Thin/10-T	$299

Dayna and Farallon Products Also Available

MONITORS / VIDEO

RASTEROPS

Horizon 24	$1999
PaintBoard Lightening	$789
PaintBoard Professional	$1399
PaintBoard 8Li /20"/16"/13"	$349
24STV	$799
24Mx	$479
Movie Pak 2 Pro Suite	$3479
RasterOps Clearvue Color 17" Monitor	$999
RasterOps 20/20 Multimode Color Display	$1729
RasterOps 20T Color Monitor	$1999

RASTEROPS® THE ART & SCIENCE OF COLOR™

Paintboard Professional $1399

E-Machines Futura IISX	$459
Sony 15SF	$479
Sony 17SE1	$1229
Sony GDM 2038 20" MultiScan	$2199

"Customer Service Guaranteed!

Depend on LLB for Quality, Service and Value

- Airborne Express Overnight $6 and up.
- First quality New, Brand Name products
- P.O.'s accepted upon approval
- All major credit cards accepted with no surcharge.
- Credit card not charged until order is shipped
- Orders received before 7:30 pm Eastern time weekdays shipped same day
- We export to most countries in the world
- All returns require approval and are subject to a restocking fee
- Prices subject to change
- Open 7 am to 6 pm M-F. 9 am to 4 pm Saturdays

300 120th Avenue NE, Bldg 1, Suite 120, Bellevue, WA 98005, (206) 454-7258

1 - 800 - 848 - 8967

THE LLB COMPANY, INC.

MAC MEMORY, CALL FOR LOWEST PRICE

NEW POWER PC & BLACKBIRD MEMORY

30 PIN SIMMS
1X8-80/70
1X8 FX
2X8-80/70
4X8-80/70
4X8 PAL
4X8 FX
8X8-70
16X8-70

72 PIN SIMMS
1X32-70/60 4MB
2X32-70/60 8MB
4X32-70/60 16MB
8X32-70/60 32MB
NON COMPOSITE

VRAM
256K VRAM,
512K VRAM
4 & 8 BIT
VRAM SETS
1MB VIDEO ZIPS

DRAM
256K DIPS,
1MB DIPS

LIFETIME GUARANTEE

POWER BOOK
100:
2MB,4MB,6MB
140,145,170
2MB,4MB,6MB
160,165,180
4MB,6MB,8MB,10MB
165C,180C
4MB,6MB,8MB,10MB
DUO 210,230,250,270C
4MB,8MB,12MB,
14MB, 20MB,28MB
BLACKBIRD 520, 520C, 540, 540C
4MB, 8MB, 16MB, 32MB

FPU
68882-25, 68882-33

PMMU CHIPS

WE ACCEPT M.C, VISA & DISCOVER. UNIVERSITY, GOVERNMENT AND CORPORATE P.O'S WITH APPROVED CREDIT

MEMORY FOR ALL PRINTERS

1-800-662-SIMM (7466)

DATA MEMORY SYSTEMS INC.
15 UNION ST. LAWRENCE, MA. 01840
TEL. 508-683-2325 ESTABLISHED 1963 FAX 508-975-5232

CIRCLE 447 ON READER SERVICE CARD

Memory Wanted

WE BUY NEW OR USED

SIMMS

256K, 512K, 1MB, 2MB, 4MB, 8MB, 16MB, 32MB.

30 Pin, 64 Pin or 72 Pin.

POWERBOOK 2MB - 28MB

We Buy In Quantity. Call Us or Send Fax.
INNOVATIVE MICRO PRODUCTS, INC.
7645 Leesburg Pike, Suite 201
Falls Church, Virginia 22043
Tel.: 703-848-0711 Fax: 703-848-0712

CIRCLE 432 ON READER SERVICE CARD

ORLYCON ENTERPRISE CO., LTD.
P.O.BOX 68-1366 Taipei, Taiwan, R.O.C.
Fax: 886-2-760-1197

CIRCLE 457 ON READER SERVICE CARD

ACCELERATORS/FPUs

DOUBLE THE 040 SPEED!

QUADRA 605/610 & CENTRIS 610

	No FPU/FPU
40MHz 68040 **Centris 610**	$249/$399
50MHz 68040 **Quadra 605/610**	$599
Mobius Speedster 25MHz	$349/$449
33MHz w/128K cache	$489/$589
25MHz 030 **Mac SE**	$129/$178
25MHz 020/FPU/16K cache **LC**	$99
25MHz 030/FPU/16K cache **LCII**	$129
33MHz 030 **Mac II, IIx**	$189/$238
256K Cache Card **PowerMac**	$249
68040-25 FPU **Q605,610, LC475**	$249*
68040-33 FPU **Q,LC,P575/630**	$299*
(*with 68LC040 trade-in)	
68882 **FPU LC I-III, Duo**, etc.	$39-49
68851 PMMU w/Mode32 **Mac II**	$99

CONNECT TECHNOLOGIES
Irvine California Since 1986
714-261-2800 Fax 714-261-2461
800-945-3668
No Surcharge — *Gov't./Corp./Educ. P.O.* — No Surcharge
One year warranty!

CIRCLE 444 ON READER SERVICE CARD

LIND PowerBook 500 Accessories

PB 100 Series & Duo Products Available

Lind PowerCenter 500™
- The Multi-Function Power System!
- Performs Battery Diagnostic Tests and Applies Corrective Actions!
- Charges & Conditions Two PB 500 NiMH Batteries! • Allows Spare Batteries to be used as a Power Source! • Two Digital LCD Screens Show Percent of Power Remaining! • LPC-500 - $249.95

Lind DC Adapter 500™
- Charge and Power from an Automobile's Lighter Socket!
- Completely Fused and Regulated! • PB-5 - $99.95

Lind Portable Power Pack 500™
- 4x Power from a Flat Battery Pack! • Built-in Power Meter Displays Power Remaining! • APP-112-500 - $229.95

800-897-8994
Fax-On-Demand
(612) 927-4671

Lind Electronic Design, Inc.
6414 Cambridge Street
Minneapolis, MN 55426
Tel: (612) 927-6303 • Fax: (612) 927-7740

©1994 Lind Electronic Design, Inc.

CIRCLE 433 ON READER SERVICE CARD

WANTED: USED SIMMS

TOP $$$ PAID
(trade-ins welcome)
256K-512K-1MB-2MB PB

(310)459-4591
FAX (310) 454-8474

CIRCLE 410 ON READER SERVICE CARD

Dynamic Engineering

PowerBook & Duo Accelerators

Portable Products
Memory, HDD, Battery

435 Park Dr., Ben Lomond, Ca. 95005
Fax 408-336-3840

(408) 336-8891

CIRCLE 411 ON READER SERVICE CARD

SOURCE INTERNATIONAL

Silicon Valley's
FIRST CHOICE for Computer Memory

(415) 323-6059
Fax (415) 326-3552

CIRCLE 592 ON READER SERVICE CARD

TeleFinder BBS

Create Your Own GUI On-Line Service!

- ✔ Fast ZMODEM File Transfers
- ✔ View GIF and PICT graphics online
- ✔ Easy-to-use Electronic Mail
- ✔ Conferences and Message Forums
- ✔ Gateways to the Internet and Fidonet
- ✔ Multi-User Chat and Instant Messages
- ✔ File Search and Thumbnail Previews
- ✔ Client software for Mac and Windows

Spider Island Software • 4790 Irvine Blvd #105-347 Irvine, CA 92720
Voice (714) 669-9260 • FAX (714) 669-1383 • BBS (713) 730-5785

CIRCLE 597 ON READER SERVICE CARD

GRADE MACHINE

MACWORLD MW ★★★★ See *Macworld* review 12/92 (p.263)

New Version 6.0

GRADING MADE EASY!

Grade Machine is fast, flexible and easy to learn! Design custom reports, narrative comments, graphs and much more. New special features for elementary, secondary, and college. ***Affordable*** site licenses and multi-teacher packs available. Networkable.

Rated Top Productivity Program by teachers
—*Electronic Learning Suppl.*, 4/93, p.7

Still only **$79** *+$5 S&H*
*(**$99 Deluxe Edition** adds seating charts, attendance, Spanish reports & more!)*

Misty City Software
11866 Slater Ave NE
Kirkland, WA 98034
Fax: (206) 820-4298

call **(800) 795-0049** *to order yours today!*

90 DAY MONEY-BACK GUARANTEE!

CIRCLE 513 ON READER SERVICE CARD

LXR·TEST BEST IN TESTING

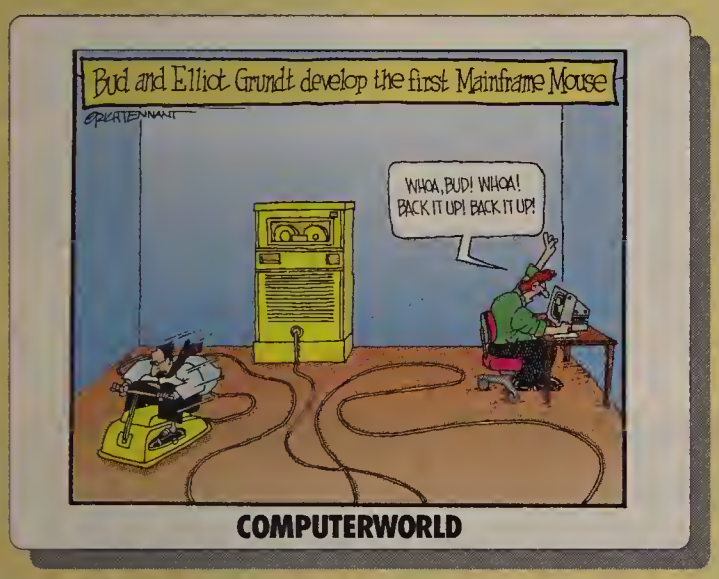
Highest-rated software for every testing environment: classroom, school, district, governmental, industrial and certification.

- ✓Item Banking & Test Production
- ✓Test Scoring w/Group Comparison
- ✓Mastery Reporting & Remediation
- ✓Survey Scoring and Analysis
- ✓Interactive Testing with Movies
- ✓Weighted & Multi-Response Grading
- ✓Accomodates All Question Types
- ✓Integrated Design (Mac & Windows)

Logic eXtension Resources
909•980•0046 Fax: 987•8706
7168 Archibald Ave. Suite 240
Rancho Cucamonga, CA 91701

CIRCLE 407 ON READER SERVICE CARD

COMPUTERWORLD's "5th Wave" Cartoon Mouse Pad



COMPUTERWORLD brings humor to a mouse pad featuring a cartoon from "The 5th Wave" series by Rich Tennant. Not available in stores, this colorful foam-backed pad will keep your mouse clean and protect your desktop. Best of all, it's only $4.99*. Send your name, address and check or money order to **COMPUTERWORLD**, P.O.Box 9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card orders, call 1-800-343-6474.

*In U.S., for each unit ordered, add $1.25 for postage and handling; orders outside U.S. add $2.50 each. Residents of MA, CA, GA, NJ, and DC add applicable sales tax. Canada residents add G.S.T. C3MW3

STUDENT-TEACHER-SCHOOL DISCOUNTS!

LATEST VERSIONS & FULL PACKAGES

★ **QUARK XPRESS V3.3 $299**
PAGEMAKER V5.0 $249 ★

POWER PC TITLES AVAILABLE

ASTOUND 1.0	$149	MATHCAD 3.1	$169
AUTOCAD R12 W/AME	$249	MINICAD + 5	$249
CANVAS 3.5	$175	MORPH 2.0	$125
CLARIS WORKS 2.1	$145	M.Y.O.B. W/ PAYROLL 4.0	$80
CODA FINALE 3.01	$249	NOW UP TO DATE 2.1	$59
DELTAGRAPH PRO 3.1	$125	PERSUASION 3.0	$199
DIRECTOR 4.1	$595	PIXAR TYPESTRY 2.0	$135
ENCORE 3.0	$299	QUICKEYS 3.01	$79
FILEMAKER PRO 2.1	$145	RAY DRM DESIGNER 3.0	$185
FRAMEMAKER 4.0	$399	SOFT WINDOWS 1.0	$249
FRACTAL PAINTER 3.0	$179	STRATAVISION 3-D 3.1	$249
FREEHAND 4.0	$195	STRATA STUDIO PRO 1.1	$495
KAI'S POWER TOOLS 2.1	$85	SPANISH TRANSLAT. PRO	$349
MAC TOOLS 3.0	$69	UP-FRONT 2.0	$125
MACROMODEL 1.5	$449	WACOM ART Z 6x8 TABLET	$279
MAPLE	$425	WORD PERFECT 3.0A	$125

MANY OTHER TITLES AVAILABLE!!
PHONE (800)289-3275
VISA - MASTERCARD - AMEX - DISCOVER
SCHOOL P.O.'S- ACCEPTED!!

Call For FREE Catalog!!

WE WILL BEAT ANY ADVERTISED PRICE!!

Call for products by Adobe and Symantec! Micorosft products available to qualified students, teachers and educational institutions.

THE SOFTWARE SOURCE CO, INC.
2517 Hwy 35, Bldg N, Suite 201, Manasquan NJ 08736
Phone (908) 528-0030 Fax (908) 528-9378

CIRCLE 570 ON READER SERVICE CARD

PROTECT YOUR MAC

Finest Quality, Custom-Fit!

ALL FABRIC

- *Heat Vantilating, will not shrink or dateriorate with age!*
- *Machine Wash & Dry!*
- *All makes & models*
- *Custom orders!*
- *Tan, Navy, Royal Red, Maroon, Gray, Brown or Black*
- *100% Satisfaction Guaranteed!*
- *Outstanding service since 1983!*
- *Found a lower price? Call us!!*

8 Color Choices!

Choose Monogramming or Heat Transfer of your Favorite Photo

11-30 Classic/II & Kybd (2pc)	$24.95	11-99 Adj.Kybd & Kypd (2pc)	$11.95
11-94 Color Classic & Kybd	24.95	10-86 Mac Extended Kybd	9.95
11-84 LC, Mac14" & Kybd(2pc)	29.95	11-80 Mac 14" Color Display	19.95
11-95 Centris610,14"&Kyb(2pc)	29.95	11-74 Mac 16" Color Display	24.95
11-96 Centris 610 CPU Only	15.95	10-37 Imagewriter II	15.95
11-77 Centris650,14"&Kyb(2pc)	29.95	11-93 LaserWriter Pro 600	19.95
11-79 IIvx/Centris 650 CPU	15.95	11-98 LaserWriter Select 300	24.95
11-97 Quadra 800 CPU	15.95	10-90 LaserWriter II	24.95
11-59 Quadra 900/950 CPU	19.95	11-25 Personel LaserWriter	24.95
12-05 Quadra 840AV CPU	15.95	11-52 StyleWriter	15.95
12-06 DuoDock,14"&Kyb(2pc)	29.95	11-91 StyleWriter II	15.95
NEW! PowerBook Pouch	19.95	91-22 H-P DeskWriter/550	19.95
???? Don't see listed hgre??	CALL	SKIN Apple Keyboard Skins	15.95

Add $4.00 Shipping & Handling (Check, MO, COD, VISA/MC) Specify Kybd

CO-DU-CO Computer Dust Covers
4802 W. Wisconsin Ave., Dept. MW, Milwaukee, WI 53208
800-735-1584 414-476-1584 • 476-9329 FAX

CIRCLE 455 ON READER SERVICE CARD

DUPLICATION FROM $.49

HIGHEST QUALITY MEDIA

From $.49 (5.25") and $.80 (3.50")

- **All Diskette Formats**
- **Custom Labels**
- **Diskette Mailers / Accessories**
- **Assembly Services**
- **Generous Volume Discounts**

FORMATTED DISKETTES

QTY 250	SONY VERBATIM	OEM GENERIC
3.50" DD	$.47	$.45
3.50" HD	$.57	$.53

- **10% Discount on First Order**
- **DOS, Macintosh, or Custom Formats**
- **Colored Media add $.05**
- **Private labeling / Volume Discounts**

800-255-3142
Diversified Systems Group, Inc.
P.O. Box 1114, Issaquah, WA 98027

CIRCLE 496 ON READER SERVICE CARD

Practica Musica 3

Your Personal Music Tutor now includes rhythm tapping, chord progressions, your choice of clefs, new sounds of guitar & voice and the 3rd edition of our friendly textbook. More than ever the most complete music training package available for both beginners and advanced students.

ARS NOVA • (206) 889-0927 • (800) 445-4866 • FAX (206) 889-0359 or (206) 828-2132

CIRCLE 595 ON READER SERVICE CARD

Software Discounts Up to 80%!

Full Packages (Students-Teachers-Schools) *Latest Ver.*

QuarkXpress 3.3	$249	PageMaker 5.0	$249
AutoCAD Rel.12	$199	Strata StudioPro	$495

MiniCAD +5	$359	Director 4.0	$598	FrameMaker 4.0	$429
Authorware 2.01	995	Symantec C++ 7	149	CodaFinale 3.01	250
SoftWindows 1.0	239	Claris Works 2.1	149	Freehand 4.0	239
Fractal Painter 2.0	179	Kai's Power Tools	89	RayDream Designer	175
FileMaker Pro 2.1	149	Swivel 3D Pro	279	addDepth 1.0	99
Mathematica 2.2	199	StrataVision 3D	250	WordPerfect 3.0A	99

We carry all the popular titles, including suite pkgs., so call! P.O.'s from schools wel!

Orders (800) 377-9943

Software Plus Academic Inc. Info/Cat (201) 569-6262
50 E. Palisade Ave. #200, Englewood, NJ 07631 Fax (201) 569-0330

CIRCLE 538 ON READER SERVICE CARD

Graphic Astrology

Professional quality software for all your astrological needs. Charting programs, Interpreters, atlases, fonts! State-of-the-art features, high-resolution output, superior accuracy.

FOR ASTROLOGERS AND STUDENTS OF ASTROLOGY

Call or write for FREE catalog!

Time Cycles Research
27 Dimmock Rd Waterford CT 06385
(203) 444-6641 • Fax (203) 442-0625

Family Roots™
Genealogy. Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indexes and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed. MC/Visa/AE.
Quinsept
Box 216
Lexington MA 02173
617/641-2930
800/637-ROOT

MacMCAT v 2.0
Hundreds of questions with detailed answers & answer analysis. A physics review & online reference. An online directory of medical school admission requirements & a manual packed with info.
$29 + $3 S&H Visa/MC
MacScience Review
P.O. Box 41460
Baton Rouge, LA 70835-1460
800/456-6480 ext. 123
504/456-6481
Internet: MacMCAT@aol.com.
Not available for DOS or Windows

BIBLE MASTER™
NAS COMPUTER BIBLE

Get them all together...

King James Version
New International Version
New American Standard Bible

...add on modules
NAS Hebrew/Greek Dictionaries
NAS Topical Studies
and more!

American Bible Sales
870 S. Anaheim Blvd., Anaheim, CA 92805

DISCOUNT SOFTWARE PRICES
1-800-535-5131

CIRCLE 537 ON READER SERVICE CARD

Bible Book Store On Disk
Full Featured, Fast and Friendly Bible Study software. As the leader in Bible Study software since 1981 we have continued to listen to our customers and provide them with the tools they need. We offer the most comprehensive line of Bible study tools available.
Call for FREE catalog.
Bible Research Systems
2013 Wells Branch Pkwy #304
Austin, TX 78728
800/423-1228
512/251-7541

COMPUTER GRAPHICS

- Animation
- Desktop Publishing
- Photo Retouching
- Computer Illustration

1-800-225-9023
INTERNATIONAL FINE ARTS COLLEGE
1737 N. Bayshore Dr., Miami, Florida 33132
or Fax your inquiry to: (305) 374-5933
Classes start Jan. & Sept.

Name _____
Address _____
City _____ State _____ Zip _____
Phone (____) _____
Yr of HS Graduation _____ Age _____

CIRCLE 565 ON READER SERVICE CARD

Family Heritage File™
Genealogy. New Version 3.3! Most powerful and easy genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals. • Stand alone • Graphic Pedigree, Descendants, Family Group, Individual, Marriage, Surname • Unlimited History • Sorted Lists • Export to WP/data base/ modem • GEDCOM compatible • Jewish/LDS features. $149 + 5 s/h. Ask about Family Heritage Bundle. Visa/MC. Demo $7. Free Lit Pak.
Star•Com Microsystems
Windsor Park East
25 West 1480 N., Orem, UT 84057
801/225-1480

REUNION®
the family tree software

★★★★½ *MacUser* Oct '90

New Version! Reunion quickly organizes your family information, displays pictures, shows relationships, creates large graphic tree charts, calendars, family group sheets, mailing lists, cascading pedigree charts, book-style family histories, and more. To order, call 800-334-4444. For a free brochure, contact:

Leister Productions
P.O. Box 289, Mechanicsburg, PA 17055
Phone 717-697-1378 — *Fax* 717-697-4373
CompuServe 71201,1105 — *AOL* LeisterPro

Why Are We Giving Away QuickTime™ Video CDs For Only $10.00...

A Suite of QuickTime™ Videos for Mac & Windows

Includes FREE QuickTime™ 2.0 for Macintosh!

Retail Price $29.00

...To Introduce a New Series of Quantum Leap Photo CDs, QuickTime™ CDs, MPEG Music Videos & Multimedia Screen Savers...

Receive a Free QuickTime™ Video CD With Any Purchase of a Quantum Leap Product!

Call Quantum Leap at 800-762-2877

Quantum Leap TECHNOLOGIES

Quantum Leap Technologies, Inc.
2916-B Ponce de Leon Boulevard
Coral Gables, FL 33134 USA
Phone: 305-446-4141 • Fax: 305-446-4074

CIRCLE 412 ON READER SERVICE CARD

Kids: win a color printer in story contest!

Ages 7-16 call 800-669-6574 for entry form. Must enter by 9/30/94.

Story Artist Kit makes writing fun! Includes over 140 scenes & characters, color paint program, plus 3 exciting fonts:

Aladdin
DRACULA

TEACHERS: Try free demos of lesson planning, testing & grading software. Type fractions & roots with MathMaker Fonts, and see our new School Fonts.

MOUNTAIN LAKE SOFTWARE, INC.
800-669-6574 / fax: 415-752-6506

CIRCLE 478 ON READER SERVICE CARD

PRO PHOTO CD
PRE-PRESS SCANS

The Digital Photography Specialist

- Pro, Repro, and Presentation PCD Scans (35mm to 4x5)
- Authorized Agfa, Kodak, and Leaf Scanner Reseller

800 735-1950

PalmerPhotographic
2313 C St. Sacramento, CA 95816

CIRCLE 413 ON READER SERVICE CARD

CD-Link
Catalog Warehouse
Grolier
1994 Encyclopedia 6.0
$49

Grolier Encyclopedia	$49
World Atlas	$22
US Atlas	$22
Funny	$10
Great Business Jokes	$10
The Orchestra	$12
World Tails	$10
The Animals!	$18
Space Shuttle	$16
Oceans Below	$16
Desert Storm	$10
The View From Earth	$10
Mac Prod Directory	$10
Capitol Hill	$10

Take ALL 14 Titles Listed Above for... $199

Call for General/ADULT Catalogs
1-800-858-0311
15500 ERWIN ST. #2002, Van Nuys, CA 91411
(818) 785-2800 Fax (818) 785-3100

CIRCLE 430 ON READER SERVICE CARD

QuickTime® Unplugged.
"★★★★" Macworld 6/94
Now at MacWarehouse!
1-800-255-6227 / international sales: 1-908-370-4779
FOR INFO: S. H. Pierce & Co., Suite 323 Building 600, One Kendall Square, Cambridge, MA 02139 617-338-2222 FAX: 617-338-2223 ©1994 Patent Pending.
FLIPBOOK™

CIRCLE 418 ON READER SERVICE CARD

Macinternet CD-ROMs
•InfoMac 4 CDROM, 600MB of current PDS/Shareware from Stanford Univ's InfoMac Internet Archive.
•MacSource CDROM, 600+MB of utilities and source code from the internet.
•HyperStacks CDROM, 1000 HC Stacks! Including games, books, tools, education.
•MacGames CDROM, the 600 best Mac games from InfoMac Archive.
•$49.95 each + $5/US $9/Int. s&h.
•$20 DISCOUNTS—please inquire.
Pacific HiTech, Inc.
Tel: 801-261-1024 Fax 801-261-0310
800-765-8369 Email: orders@pht.com

CIRCLE 414 ON READER SERVICE CARD

Power Tools for the Power Presenter
One stop shop for all major brands
SALES•LEASES•RENTALS
COLOR from $1,795
For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back.
Quick delivery via Fed-X or UPS.
Call for CATALOG 1 800 726 3599
Panelight DISPLAY SYSTEMS, INC.
101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST
VOICE: 415 772 5800 FAX: 415 986 3817

CIRCLE 578 ON READER SERVICE CARD

NEW!
Introductory Price
$24.99
Retail Price $99
Also Available: Europe vol. #1
Satisfaction Guaranteed
Call 1-800-232-3766
WORLD WIDE CD-ROM IMAGES
American Desert Southwest
• 122 Hi-Res Images
• 100% Royalty Free
• Fully Cataloged
• Software Included
Stunning Pictures from Grand Canyon, Red Rock, Death Valley, Mojave, Joshua Tree, Big Bend, Arches, Monument Valley, and MORE!

CIRCLE 416 ON READER SERVICE CARD

ADOBE™

New, Lower Prices	Adobe List	FF Price
	$275	$187.50
All Fonts Ship Same Day	$205	$142.50
	$145	$96.50
$3 Overnight Delivery	$105	$72.50
	$80	$52.50

Call for Free Catalog
Fonts in a Flash™
(800) 435-1303
9:30-4:00 Central, M-F
No Surcharge

FontSoftware
800.248.3668
ADOBE · AGFA · BITSTREAM · LETRASET
LINOTYPE · HELL · MONOTYPE · URW. . .
Thousands of fonts from over 40 companies large and small, all at low discount prices.
264-page catalogue available for $6.95 plus $2.50 shipping and handling. Contact Precision Type for more information.
Precision Type
47 Mall Drive · Commack New York 11725-5703
PHONE: 516.864.0167 FAX: 516.543.5721

CIRCLE 485 ON READER SERVICE CARD

POSTERS MURALS BILLBOARDS BACKDROPS TRADESHOW EXHIBITS BANNERS
THE ONLY FAST, EASY, ECONOMICAL WAY TO CREATE LARGE-FORMAT PRINT JOBS.
- Layouts up to 10,000 square feet
- Imports EPS, TIFF, Scitex CT artwork
- Drives any PostScript printer
- Fixed, custom and automatic tile sizes
- Variable panels, margins, gaps, overlaps, bleeds
- Hundreds of professional large-format production tools
- Supported by a network of service bureaus nationwide

For info call: (617) 338-2222 or fax: (617) 338-2223
Now at MacWarehouse! 1-800-255-6227
"★★★★" Macworld 8/93 MacWEEK 2/93
©1994 S. H. Pierce & Co.
Ste. 323 Bldg. 600, One Kendall Sq., Cambridge, MA 02139
1990 NOMINEE Macworld
IT'S GOT MOXIE!
PosterWorks
PRESENTATIONS POINT - of - PURCHASE DISPLAYS

CIRCLE 594 ON READER SERVICE CARD

- Model and photo released for immediate use – royalty free.
- High-resolution, color-corrected for CMYK separation or B & W output.
- Indexed printed catalogs.
- Over 3,800 images available with new volumes released every quarter.

Take advantage of the Starter Kit Special: 4,000+ low-res images plus 25 high-res images for only $29. Includes printed catalogs of Volumes 1-14.

PHOTODISC™

T (800) 528. 3472
F (206) 441. 9379

CIRCLE 429 ON READER SERVICE CARD

Detailed Networks in Minutes with NetDraw® 2.0!

With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just $129.95, NetDraw® 2.0's complete clip art library is easily imported into most Macintosh applications. **Call 800-643-4668 to order your copy today!**

Clip Art for Building Networks®
NetDraw

CIRCLE 461 ON READER SERVICE CARD

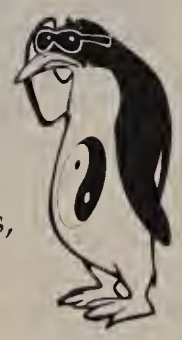
Results! Are what our customers want...

And **results** are what they get via
- 50 Vector Input Formats - 2D & 3D
- 40 Vector Output Formats - 2D & 3D

Results that work for dozens of professions, throughout your office or manufacturing plant... work easier, work smarter with -

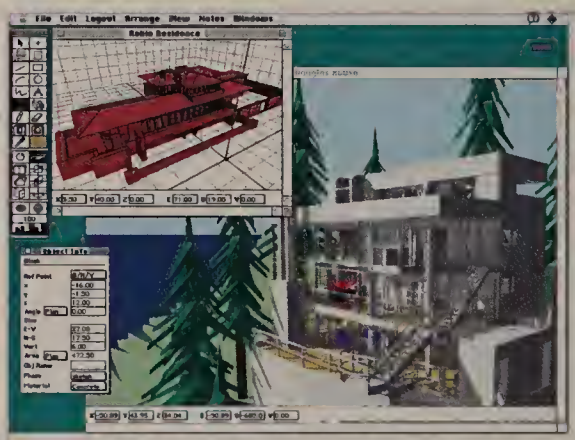
CADMOVER® - Graphic Translator

Call 703-532-0213 for more information.



KANDU Software Corporation

CIRCLE 477 ON READER SERVICE CARD



A Design Breakthrough ...intuitive 3D modeling

PowerPC Native or 68-K

- easy, fast, intuitive 3D CAD
- 3D direct manipulation
- sketch in live 3D perspective
- object-based shadows
- fit, flip, snap to objects
- paste into openings
- sun studies, walkthroughs
- import/export DXF, PICT, etc.

DesignWorkshop™

Call Artifice: 503-345-7421
or fax: 503-346-3626
In Canada: 204-453-8111

CIRCLE 408 ON READER SERVICE CARD

AdArt
ALSO AVAILABLE ON CD-ROM
Encapsulated Postscript Images
FEDERAL EXPRESS
REALTOR®
Recycled Art • Wedding
Real Estate Art • Astrology
Flags of the World • Mascots
Cars & Light Trucks • Animals
Logos & Trademarks, 1 - 12
Int'l Symbols & Icons, 1 & 2 • Women
Business Symbols • Medical Symbols
Safety & Packaging • Fraternal Symbols
Accents & Attention Getters • Transportation
Also: Special Edition Vinyl Cutters Packages
FAX 802 878-1768 • INFO: 802-879-1164
800 255-0562
MasterCard VISA
Innovation Advertising & Design
41 Mansfield Ave • Essex Jct., VT 05452

CIRCLE 566 ON READER SERVICE CARD

MAPArt™ MAPS FOR GRAPHIC DESIGN
FULLY EDITABLE WITH ILLUSTRATOR, FREEHAND & OTHER PROGRAMS!
World Maps
Continents
Major Countries with States & Provinces
US States with Interstates, State Highways, 3 Digit Zip Areas & Counties!
"Fine Artwork" MacWorld 1992
CARTESIA
5 S. Main St., Box 757
Lambertville, NJ 08530
Voice 609-397-1611
24 hr. FAX 609-397-5724
CALL FOR FREE CATALOG
800 334-4291

CIRCLE 415 ON READER SERVICE CARD

Super Anatomy Collections
"...technically and artistically superior."*
LifeART™ Professional Medical Clip Art
CD-ROM
Super Anatomy 1,2,3
Now Shipping!
- 400 New Images
- 100% Compatible in all Mac Software
- Editable in Illustrator and MacDraw Pro!

TechPool Studios
Cleveland, Ohio
Tel: 216-291-1922
Fax: 216-382-1915
FREE Catalog
800-LifeART
543-3278
*Medical Software Reviews

CIRCLE 533 ON READER SERVICE CARD

Logo Design Software
Create logos like this in minutes; sell them for $75 - $500.
Logo SuperPower® is a large graphic database. You use one or more "design elements" and modify them to create world-class logos in minutes. There are **over 2,000 logo design elements** in the full package. Or, choose the basic package of 660+ elements. For the Mac: Requires FreeHand or Illustrator.
Logo SuperPower - basic
(660+ design elements).....$119
Logo SuperPower - full
(all 2,000+ design elements).....$279
To order, or for information, call
(800) 648-5646
Decathlon Corp. • 4100 Executive Park Dr.
Cincinnati, OH 45241
Phone (513) 421-1938

SAVE 60% *off the cover price*

12 Issues for $24!

When you subscribe today

☐ Send me 1 year (12 monthly issues) of Macworld for $24. Save 20% off the basic subscription rate. Please bill me later.

☐ SAVE EVEN MORE! 2 years (24 monthly issues) for $39.97.

Please bill me later.

Basic subscription price is $30 for 12 issues. The annual cover price is $4.95 per issue. For Mexican and Canadian subscriptions, please add $18 per year for shipping; $70 for all other foreign countries.

Name _____

Company _____

Address _____

City/State/Zip _____

Macworld

4CMP1

SAVE 60%
off the cover price

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

Medical Office Mgmt
TessSystem 3™ is a complete system for insurance processing, patient billing, accts receivable, patient transactions, report generation & much more. Single/multi doctor, single/multiuser. Flexible & very easy to learn. Optional electronic claims. From $2,995. New practice discounts available.
Call Today!
Tess Data Systems, Inc.
14340 Torrey Chase Blvd, Ste 340
Houston, TX 77014-1021
800/218-TESS - Sales
713/440-9995, 713/440-6526 Fax

Macの日本語はクォリタスにお任せ下さい。
Qualitas is your Japanese Resource!

Japanese Language Kit!

QuarkXPress - J	MacWord
Aldus PageMaker - J	EGWord
Aldus Freehand - J	SOLO Writer
Adobe Illustrator - J	Excel
Adobe Photoshop - J	ATM-J
JapanEase Vol.1	LogoVista E-J
JapanEase Vol.2	Applause E-J

special price!

Qualitas Trading Co.
2029 Durant Avenue,Berkeley, CA 94704
Phone : (510) 848-8080 Fax : (510) 848-8009

CIRCLE 582 ON READER SERVICE CARD

Care4th® PRO
An ELECTRONIC MEDICAL RECORD SYSTEM and DATABASE with full printout support. Imagine your entire medical record shelf & much more in a lap or desktop Mac! Utilize clinical data in ways you could never have imagined. In 40 states and abroad, Care4th® Pro is the gold standard. Single & network versions available, starting well under $3000!
Med4th Systems, Ltd.
716 East Carlisle Avenue
Milwaukee, WI 53217
414/963-1985 Voice and Fax

MACTRAN PLUS Ver.4.5
Sys 7 Comp INTEGRATED Made-for-Mac Devel System, Incl: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Mngr, Profiler and Build Facility. Supports 68020/030/040 & 68881/2 native code. Significant Vax Fortran & ANSI 8x exts. High and Low Level tool box interface. Unltd Code seg size. *"I use it at home on my MAC II, on a Quadra in my Lab and on a Powerbook while traveling" Ole Vilman, Consultant Engineer.*
DCM Data Products
1200 Quail St, #280
Newport Beach, CA 92660
714-724-0802/1021
714-724-0803 FAX

FORTRAN 77 • System 7
LS FORTRAN is an ANSI/ISO standard FORTRAN 77 compiler for the Macintosh. Supports extensions from VAX and Cray FORTRAN, built-in debugging, background execution, software or hardware floating point, optimized code generation, and 2D or 3D graphics support. The complete solution to your FORTRAN programming needs.
Language Systems Corp.
P.O. Box 140
Sterling, VA 20164
703/478-0181
703/689-9593 Fax
800/252-6479

IMAGERS®
Digital Output & Production Center
- Slides & Overheads
- Kodak *PortFolio* Services
- Dye-Sub Overheads/Prints
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W
- Economy Slides/$3.00

OVERNIGHT $4.95 Slides & Canons POSTSCRIPT
Photo CD™ Scans $.90
(800) 232-5411
22-7th St. • Atlanta, GA 30308 • 404-873-5353

CIRCLE 456 ON READER SERVICE CARD

MAC REPAIR
Mac Shop Northwest
- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards
- Lifetime Repair Warranty*

Tel: 1-503-642-3456
*on many repairs. Visa/MC/AX. *Fast* overnight shipping available. We use genuine Apple™ parts.
FEDERAL EXPRESS
1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

INK JET REFILLS
for HP printer cartridges
Patented SwanPak™ easy fill system Ideal for:
Businesses, Schools, Colleges, Offices, Lew firms, etc.

SwanPak 20™ (20 refills)	$ 99.75
SwanPak 10™ (10 refills)	$ 69.95
Hi-Capacity Twin Pak (2 refills)	$ 14.95

Plus S&H MC/Visa welcome
Also available for: Cannon, Epson, HP colors
Satisfaction Guaranteed
DEALER PROGRAM AVAILABLE
1-800-4-INKJET
Independent Ink, Inc. (since 1939) 14705 S. Avalon Blvd. Gardena, CA 90248 (310)523-4657 Fax 329 0943

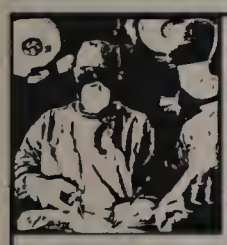
CIRCLE 448 ON READER SERVICE CARD

SLIDES

From PC & Mac files	$3.75
4x5 chromes/negs	$16
Dye sub print/overhead	$18
Hi Res Scanning	$10

Call for special pricing on Quantity Duplication of Slides & Overheads
Show & Tell 39 W38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD



CPR &RS, Inc.
Computer Peripheral Repair & Recovery Services, Inc.
"Professional Data Recovery Service at a reasonable cost since 1981"
Manufacturer Trained Technicians
No Recovery No Charge
98% Success Rate
All Storage Devices & Operating Systems
11440 Okeechobee Rd. Suite 201
Royal Palm Beach, FL 33411
800 765-9292 • 407 795-7266

CIRCLE 452 ON READER SERVICE CARD

We can scan your 35MM slides & negs onto Photo CD
24 Hr Turnaround
as low as **60¢** an image
Photo CD™
1-800 WRITE CD
800-974-8323

CIRCLE 502 ON READER SERVICE CARD

"If it hadn't been for DriveSavers, our information would have been lost forever."
–S.S., Sebastopol

As the only all-Mac data recovery company, we've saved more megabytes of Mac data than anyone else in the world. We're certified by every Mac drive manufacturer. Our proprietary techniques are so advanced we can rescue data others might simply abandon.
1-800-440-1904
Restoring data–and peace of mind–since 1989
400 BEL MARIN KEYS BL. • NOVATO, CA 94949 • FAX: 415-883-0780 • PH: 415-883-4232

CIRCLE 510 ON READER SERVICE CARD

Don't Panic

"The Data Recovery Experts™"

- Best Success Rate
- Fast Turnaround
- No Recovery—No Fee

Absolute Data Recovery!

TOTAL RECALL™
800.743.0594

2440 Waynoka Rd. • Colorado Springs, CO 80915
719-380-1616

CIRCLE 458 ON READER SERVICE CARD

DATA RECOVERY

See us at Comdex Fall 1994 Sands 4645

- **Expertise in Macintosh** & virtually every operating system & storage device - including tape & removable media
- **24-Hour Worldwide Support** with on-site, weekend, and priority service
- **Professional Service Authorized** by major manufacturers

Ontrack Data Recovery — World Class Service

Ontrack DATA RECOVERY®

MN: 1-800-872-2599
CA: 1-800-752-7557

London: +44 (0)81 974 5522 • Germany: 0130-815-198 • France: 05 90 72 42
~ Ask about our referral programs ~

CIRCLE 459 ON READER SERVICE CARD

Macworld SHOPPER

HOT SHOPPER PRODUCT CATEGORIES
HELP BUYERS FIND THE PRODUCTS THEY NEED FAST.

Chromascript & Forte

NOW AVAILABLE! Iris & 3-M Rainbow Prints Overnight and Economy Service

Experts in Mac/PC Imaging

Starting at $3.50 per slide

Now Imaging 4x5

NEXTWAVE PRODUCTIONS™

24 hr BBS
24/72 hr service
Volume discounts
3-5 hr Immediate svc.
High volume slide duplication
Scanning and production services

212/989 2727 800/445 9002

CIRCLE 488 ON READER SERVICE CARD

SAFEWARE

Insures Your Computer

The Computerowners℠ Policy insures you against **theft, fire, accidental damage, lightning even power surge!** Replace or repair for $49 a year. Available in the U.S. & Ontario.

1-800-800-1492

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202

CIRCLE 522 ON READER SERVICE CARD

!!!Repairs by Mail!!!
Repairs from $5.00!!! Same-day turnaround in most cases!! New and used hardware for sale! We buy dead Apples, Macs, PCs. Noon to 5:00, 6:30 to 10:00.
Arminius
8519 Orchard Avenue
Merchantville, NJ 08109
609-662-3420 (voice)
609-662-6460 (fax)

DATA RECOVERY
DISASTER PLANNING • UPGRADES

- High Success Rate
- Free Estimates
- 24 Hour Turnaround Available
- No Recovery, No Fee

1.800.7 DEMAND

- MACINTOSH
- POWER MAC
- DOS

HIGH IN DEMAND
381 Clementina Street
San Francisco, CA 94103

415.495.5556 Fax 415.495.5553

CIRCLE 427 ON READER SERVICE CARD

OVER
1/2 MILLION
ACTIVE BUYERS FIND
WHAT THEY ARE
LOOKING FOR
IN THE
MACWORLD
SHOPPER SECTION.

Macworld SHOPPER®

Wake Up to Power Mac!

Macworld is the Power Macintosh expert. We cover the latest Mac developments, trends, and product announcements. To find Power Macintosh coverage, and to find it fast, just follow the logo to Reviews, News, and Star Ratings.

Macworld

THE MACINTOSH® AUTHORITY

The cutting edge of Mac technology!

SMARTVOICE

Give your Mac a clear, natural voice with SmartVoice

- Reads any text in any program
- Add speech to your favorite word processor
- Great for proofreading—find out how your writing REALLY sounds
- Works in the background so you can work while your Mac reads
- Comes with 14 unique voices, speech lab, talking computer psychiatrist, talking text editor, talking clock, talking calculator, and more fun extras
- Uses Apple's new PlainTalk™ technology
- Comes bundled with Apple's SpeechManager™, MacinTalk 2™, and MacinTalkPro 2™
- High-quality synthesized speech with realistic inflection and tone
- Speaks notification boxes from the Finder; for example if the printer is out of paper your computer will actually tell you outloud
- Works on any Macintosh

"SmartVoice is not only fun, it's a wonderful productivity tool. It's a must have for any Macintosh user!"
–Chris Moeller

SmartVoice $49.95
retail $89.95

MORE FUN & POWER

SMARTVOICE BONUS PACK

Speech Bonus Pack Features:

- An incredible digital "tape recorder" that allows you to transcribe hours of letters and memos to yourself (or your secretary) on your Mac. Then play them back while you're typing in any word processor. *(Also included with YourVoice)*
- Azile—a vile-tongued talking psychiatrist with an attitude. Match wits and insults as Azile gives you absolutely no help at solving your petty personal problems. Its animated talking head will "mouth" the words from your Mac.
- Almost 3 MEG of full electronic text versions of famous novels, including Star Wars, Alice in Wonderland, The Gettysburg Address, and more. Let SmartVoice read this material to you or your children. Or just plain read it, print it, fax it, e-mail it, even rewrite it! Welcome to the future.

$29.95 With Purchase Of SmartVoice Save $60

"I love the digital tape recorder included in the Bonus Pack. It cuts my work time in half."
–Allison Bundy

QUALITY COMPUTERS

Tenth ANNIVERSARY

1-800-777-3642

SCHOOL P.O.S BY PHONE, FAX OR MAIL

The cutting edge of Mac technology!

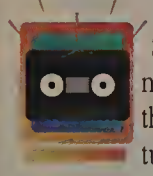
YOURVOICE

NEW!

A Perfect Complement To The Power of SmartVoice

YourVoice
Efficiency package

Using just the mouse and your Mac's microphone, you can record appointments, alarms, and notes to yourself—no typing required! It's quick and easy—and a perfect complement to the power of SmartVoice speech synthesis. Includes the three great speech enhanced programs listed below.

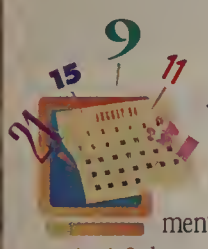


YourVoice Recorder

Store your memos and personal notes on your hard drive using this tapeless recorder! Full-feature control panel allows you to "rewind" and "fast-forward" instantly without the hassles of tape. Messages can be played back "in the background" while you work on something else—perfect for transcribing your recordings in a word processor! *Also included in SmartVoice Bonus Pack.*

YourVoice Alarm Clock

Stay on track with this digital alarm clock that reminds you of your daily schedule—in your own voice or one of the dozens of other included sounds! And it has all the features you expect from a computer clock—including a timer, snooze control, and a "minimized" display mode for hiding in the background while you're working on something else.



YourVoice Calendar

You'll use this calendar every day, thanks to its attractive monthly display and appointment reminders delivered in your voice! Select the date and time for each appointment using just the mouse, then record your reminder using your Mac's microphone.

"It's fast, fun and friendly, but best of all it's my voice!" **—Mitch Sanders**

now only $49.95 *retail $89.95*

with purchase of SmartVoice or for current SmartVoice owners

Apple PlainTalk microphone. $34.95
(microphone is not included with YourVoice package)

YOURVOICE IN

RECORD YOUR MEMOS AND REMINDERS. . .

YOURVOICE OUT

YOURVOICE READS THEM BACK WHEN YOU NEED TO HEAR THEM

MACnificent 7
3rd Edition

Thousands of programs

NEW!

Art • Adventures • Astronomy
Arcade Action • Chemistry • Board Games
Geography • Card Games • Health
Simulations • Languages • Sports
Political Science • Trivia • Physics
Word Games • Music • Math • Puzzles
Literature • Nature • War Games

Now you can have the most comprehensive, up-to-date collection of Macintosh, PowerMac, and Newton shareware and freeware games and educational programs in existence—with the MACnificent 7 CD-ROM, Third Edition. Every single one of the more than 4,200 programs, demos, and support files have been tested for compatibility with System 7, 32-bit addressing, and the Power Macintosh. (The Third Edition includes more than 300 new programs!)

The included Librarian software makes it easy to find the software you're looking for and copy it to your hard drive in seconds—and it also contains descriptions, ratings, tips, and compatibility information for over 1,800 programs. With over 550 megabytes of great software, there's something for everyone in your family!

all for only $44.95

1-800-777-3642

Quality Computers ™

20200 Nine Mile Rd. • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

America's leader in educational technology!

THE BEST DEAL IN CLIP ART

CLIP ART CD

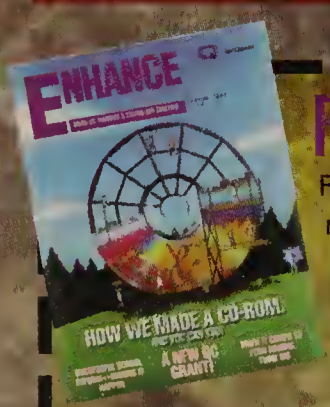
"I have purchased over 15 different clip art collections, and yours is truly the best!"

—Scott Goldstein

- Over 1200 high quality curriculum-oriented images, borders, and more!
- 20 different categories
- Pictorial Index & Catalog included
- PICT & EPS formats
- Easy-to-use
- 30 Day Money Back Guarantee
- Preferred choice of educators

ONLY $49.95

Also available on 3.5" diskettes. Ask for details!



FREE EDUCATIONAL CATALOG

Find out why Enhance is America's favorite journal & catalog of educational technology. Every year, over a million educators look to Enhance for grant writing tips, technical advice and product reviews. Enhance is free! Just clip and mail this order form or call 1-800-777-3642 and ask for your free copy.

Name _____

Address _____

City _____ State _____ Zip _____

Phone (_____) _____

Occupation: ❑ Educator ❑ Other _____

Title _____

MacWorld Quality Computers • 20200 Nine Mile Rd • St. Clair Shores, MI 48080

AUTHORIZED EDUCATIONAL DEALER

CERTIFIED PARTNER IN EDUCATION Broderbund

SYMANTEC.

Microsoft®

ALDUS

mecc

Davidson.

CLARIS™

HEWLETT PACKARD

The Learning Company

GUARANTEED LOWEST PRICES!

Rated #1 America's leader in educational technology

1-800-777-3642

Circle 263 on reader service card

Quality Computers ™

20200 Nine Mile Rd • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

CD-ROM EXPLOSION!

FREE EXPRESS SHIPPING — Free express shipping on products marked with an ✈.

FREE CATALOG—OVER 900 TITLES IN STOCK — **We'll BEAT any advertised price on CD-ROM products! (Some restrictions apply). New lower prices.

GAMES

Action, Aliens & Mysteries!
#GB2, $79.95 3 award-winning CDs, *Jump Raven, Lunicus* and *Who Killed Sam Rupert?*

1467	Better Dead	$49.95
50027	C.H.A.O.S. Continuum	29.95
50390	Critical Path	36.95
50149	Darkseed	44.95

Spaceship Warlock #D1583
$19.95 (MSRP $95)
- Offer valid with purchase.
- Limit 1 per customer.
- While supplies last.
- Not AV compatible.

50450	Flying Nightmares	44.95
1476	Hell Cab—New lower price!	45.95
2084	Iron Helix	59.95
2068	Journeyman Project	49.95
50066	Jump Raven	44.95
50080	Manhole Masterpiece	34.95

Midnight Stranger ✈ #50316, $59.95
"This is a landmark product that should be in the Smithsonian Institution." *Glenn Collyer, SFSU*
Adults only. A strange night out in a gritty urban environment. The fist CD to employ *Virtual Intimacy*. Free headphones!

FREE STEREO HEADPHONES

50107	Myst	47.95
50438	Rebel Assault	49.95
50439	Spectre VR	49.95
50375	Tetris Gold	39.95
50135	The 7th Guest	49.95
50610	The 11th Hour	59.95
1960	Who Killed Sam Rupert?	19.95

GameROOM ✈ #D1611
1,000 Shareware games.
$19.95 (MSRP $39.95)
Limited time offer.

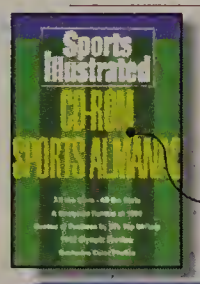
GENERAL

I Photograph To Remember #D1774
$9.95 (MSRP $39.95)
Limited time offer.

ENTERTAINMENT/GENERAL

Baseball's Great Hits v.1 #D1771
$12.95 (MSRP $79.95)
Limited to stock on hand.

1642	Family Doctor	$47.95
50403	The Complete Maus	34.95
1470	How Computers Work	53.95
50311	Art Gallery	56.95
50319	Freak Show	34.95
50079	Great Golf	47.95



Sports Illustrated Sports Almanac '91 #D1948
$14.95 (MSRP $59.95)
Limited to stock on hand.

Amazing Media Bundle #AM3, $49.95
You get 3 CD-ROMs: •Oceans Below •Space Shuttle •Capitol Hill

2095	A Hard Day's Night	$27.95
50313	Musical Instruments	56.95
50321	Society of Mind	34.95
50296	Virtual Tarot	43.95
50125	Wines of the World	49.95

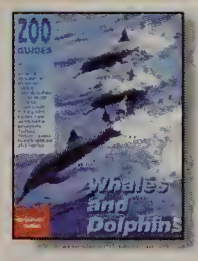
EDUCORP Shareware 9.0 ✈ #1300, $99.95

New & updated version! The best collection of pd and Shareware just got better. 100% System 7 compatible • easier to use • special documentation for new users • a browser • tech support • demos and more! Over 1 gigabyte of games, business, education, clip art, more.

EDUCATION & BUSINESS

Multimedia Encyclopedias
"...wonderful...excellent ...fun!" *Sweetwater Union H.S.*
Designed by biologist Rob Ransom, Ph.D., a MacUser Eddy award winner for Best Database Resource. Features include a unique easy-to-use interface, export text, photography, video, expert narration and search by keyword or key phrase.

50110	Encyclopedia of Dinosaurs ✈	$39.95
1280	Encyclopedia of Life ✈	54.95



ZooGuides Series
"...a series of beautiful interactive zoo discs." *MacUser Magazine*
Each volume is designed and written by Rob Ransom, PH.D. Features include full motion video, expert narration, animation, photography, distribution maps and a guide to families and species.

2081	Butterflies of the World	$39.95
1275	Mammals of Africa	39.95
50300	Rainforest	39.95
1210	Whales & Dolphins	39.95

1896	Berlitz Think & Talk Spanish	123.95
50310	Encarta	83.95
1770	Great Literature	48.95
50037	History of the Blues	29.95
1333U	Grolier Multimedia Encyclopedia	83.95
50399	JFK - History Maker	36.95
1460	Mayo Clinic Health Book	39.95
1768	Monarch Notes	49.95
50246	Power Finder	149.95
50345	Random House Dictionary	59.95
50122	Redshift MM Astronomy	57.95
2090	Small Blue Planet	59.95
50317	Street Atlas USA	97.95
50548	Money in the 90's	29.95
50414	Total History! 3-CDs	74.95
1785	A View From Earth	29.95

CD-ROM DRIVES & BUNDLES

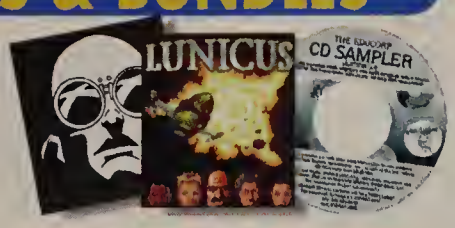
FAST QUAD-SPEED!

CD Technology T3501 Porta Drive #3501
Access Time: 150 ms. High performance with Toshiba mechanism.
$489

Part #	CD-ROM Drive	Alone	Bundle
1824	CD Tech T3401	$369.00	$629.00
945	Nec 3Xe	459.00	739.00
944	Nec 3Xp	389.00	639.00
978	Pioneer 604x	1,199.00	1,399.00

Add an "A" in front of part # for the bundle.

More bundles available, call.

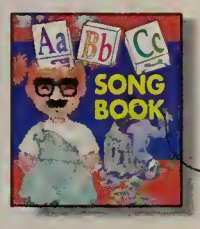


3 Free CDs with drive purchase!
Free Lunicus, Mister X and the EDUCORP CD Sampler with every drive purchase from EDUCORP.

Educational CD-ROM Drive Bundle
Bundle includes drive, 12 educational CD-ROM titles, speakers, stereo headphones, cable, driver software and power supply. Titles included are • Grolier's Encyclopedia • World Atlas • U.S. Atlas • Big Green Disc • Think for Yourself • Dictionary of the Living World • Mayo Clinic Family Health Book • Shakespeare • Sherlock Holmes • Audubon's Bird of America • Audubon's Mammals

KIDS

2078	Animal Alphabet	$29.95
1667	Benjamin Bunny	19.95
50348	CD-ROM Coloring Book	24.95
50398	Forever Growing Garden	23.95
50405	Gus Goes to Cybertown	34.95
1850	Just Grandma & Me	39.95
50436	Kid's Studio	39.95
50302	Peter Pan Adventure	39.95
50109	The Tortoise & The Hare	39.95
50306	Willy Wabbit Magic Books	32.95
1962	Word Tales	27.95

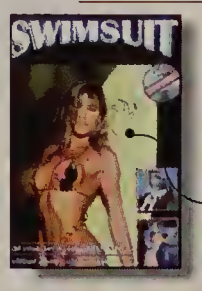


ABC Songbook #D1924
$7.95 (MSRP $19.95)
Limited time offer.

DTP Desktop Publishing

1000 Fonts ✈ #D2067
Over 1,000 Shareware & pd fonts.
$19.95 (MSRP $39.95)
Limited time offer.

P1690	Aviation Photo Disc ✈	$19.95
P50048	Best of People in Business* ✈	69.95
1297	Creative Backgrnnds & Tex* ✈	79.95
50073	Design Toolkit Pro ✈	79.95
50329	Clip Art Sampler ✈	9.95



Swimsuit v.1 ✈ #D1595
200 royalty-free photos
$19.95 (MSRP $79.95)
Limited time offer.

Earth & Space Photos* ✈ #D50442
$19.95 (MSRP $69.95)

50150	Essential Backgrnds/Textures* ✈	29.95
50141	Font Frontier ✈	39.95
1680	Graphtec Graphic Designs ✈	39.95
1686	Kids Stock Photos ✈	39.95
50525	Medical Library v.1* ✈	79.95
50526	Medical Library v.2* ✈	79.95
1696	Nature's Way ✈	49.95
50204	Professional Backgrounds* ✈	64.95
1444	Professional Photo.Collection* ✈	54.95

***These titles are in KODAK Photo CD Format.** The KODAK Logo is a trademark used under license.

THE MULTIMEDIA PIONEER℠ VISA

Prices subject to change without notice.
Dealer inquiries welcome.

EDUCORP® 1-800-843-9497

W31 7434 Trade Street ■ San Diego, CA 92121-2410 ■ Info: 619-536-9999 ■ FAX: 619-536-2345

FREE CATALOG! Foreign customers send $4 p/h. With any purchase you'll get EDUCORP's informative newsletter free.

Circle 157 on reader service card

EDUCORP WILL BEAT ANY ADVERTISED PRICE ON CD-ROM PRODUCTS**

WISE GUY

BY GUY KAWASAKI

Steve Jobs to Return as Apple CEO

"The Father of Macintosh" brings back the vision. Spindler is COO.

THE FOLLOWING PRESS RELEASE moved over PR newswire on Monday, September 31, 1994, at 8:32 a.m., EST.

FOR IMMEDIATE RELEASE. Contact: Regis Makaha, Apple Computer, Inc.; (408) 996-1010, AppleLink: uni.wish.

CUPERTINO, Calif.—September 31, 1994—The board of directors of Apple Computer, Inc., today announced that Steve Jobs, the cofounder of Apple who was purged by John Sculley in 1986, will return to Apple as chief executive officer and chief technical officer.

Steve Jobs is currently the president of Next, Inc. In his new position, he will be responsible for the overall direction and vision of Apple Computer. Michael Spindler, currently chief executive officer, will relinquish this post and become chief operating officer of Apple Computer.

As a cofounder of Apple and the father of Macintosh, Jobs brings back to Apple the type of visionary leadership that enabled Apple to create three of the four personal computer standards (Apple II, Macintosh, and Windows). In addition, because of his experience at Next, he is expected to bring a newfound sense of humility back to Apple Computer.

"Returning to Apple has been a seductive option for me ever since John decided to concentrate his technical prowess on cellular phone technology," said Jobs from the Redwood City, Calif., headquarters of Next. "At first I dismissed the idea when the Apple board contacted me. However, because I'm now a father, I needed a steadier source of income."

Board member Michael Markula describes the recruitment process, "Basically, we challenged Steve: 'Do you want to spend the rest of your life selling Unix with a sugarcoating, or change the world?' When we presented it this way, Steve reacted positively to our pitch."

"Who were we trying to kid?" asked Michael Spindler. "I am not a product visionary, and I don't want to be. My strength is fiscally responsible management and providing a reality check. Plus, I was tired of product managers complaining when I demonstrated their products. Steve can do this better than anyone. We'll soon be completing each other's sentences like Steve and John used to."

Referring to Steve Jobs's widely reported largesse toward early Macintosh Division employees, a spokesperson for Odwalla Juices said, "Our period of greatest profitability occurred when Steve ran the Macintosh Division. We see a tremendous opportunity to reenter the corporate market for fresh orange juice." A spokesperson for the new, employee-owned United Airlines chimed in, "When we heard the news, we called Boeing and doubled the number of first-class seats for the planes we had on order."

Bill Gates, chief executive officer of Microsoft, offered his support of Jobs's return, "Macintosh always has been and always will be a big part of our applications software business, and Apple is the preeminent R&D site for Microsoft system software. We believe Steve will revitalize Apple's work in system software and provide us something to copy for the next 10 to 20 years. Expect to see examples of Steve's vision in our next version of Windows, code-named Cleveland."

The Apple board also announced that it was buying Next's assets for $200 million. The intent is to fold Next Step's object-oriented programmability into future versions of the Macintosh operating system. John Warnock, CEO of Adobe Systems, commented, "With Steve's return, we foresee a close relationship with Apple, resulting in an unbelievably lucrative royalty stream for Display PostScript."

In addition to the source code of Next Step, as consideration for buying Next, Apple will receive 4,000,000 laser-printer toner cartridges from Canon, and Ross Perot will appear in a series of 30-minute PowerBook infomercials—complete with QuickTime-animated flip charts.

Headquartered in Cupertino, Calif., Apple Computer, Inc. (NASDAQ: AAPL) develops, manufactures, and markets too many personal computer models; a handful of personal interactive electronic systems; and ClarisWorks. Apple hardware is sold for use in desktop publishing, desktop publishing, and desktop publishing. A recognized pioneer and innovator (as opposed to imitator) in the personal computer industry, Apple sells its products in more than 120 countries and provides support in less than 10. m

GUY KAWASAKI's fantasies are his own, and only sporadically reflect those of *Macworld*. His latest book is *Hindsights* (Beyond Words Publishing, 1994). He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.

End-User Rebates. MultiSync 2V $25, MultiSync 3V $40*

Introducing the MultiSync® Value Series Monitors.
The affordable solution for those who make your business run.

They're the people you count on to get the job done. From secretaries to shipping, they need all the help you can give them. Luckily, the 15" (13.8" diagonal viewable area) MultiSync® 3V and the new 14" (13" diagonal viewable area) MultiSync 2V work with the latest Macs and give you the great colors and sharp display you'd expect from NEC. They support multiple resolutions and let you switch between them with NEC's DPI-on-the-Fly® software. You also get a monitor that's MPR II compliant and has a 3-year limited warranty. It's more than you'd expect at such a great price. But then again, you're probably used to getting the most for your money. Questions? Call 1-800-NEC-INFO. Or, for information via fax, call 1-800-366-0476 and request our Mac products catalog #4. **The easiest monitors to live with for hours and hours: Ours.**

MultiSync 2V

NEC

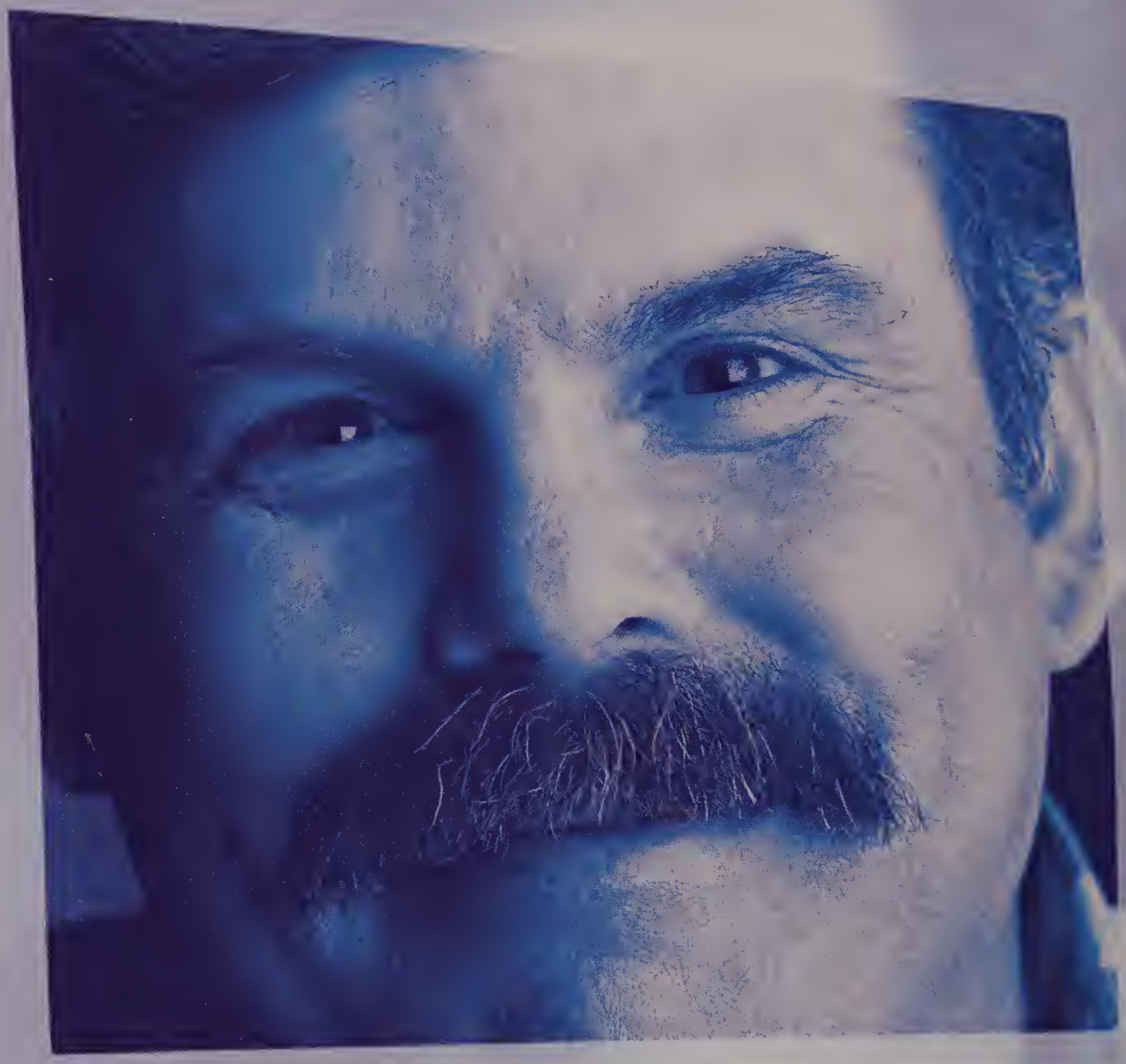
Circle 16 on reader service card

Optional cable adapter, required for Macintosh connection, available free from NEC. MultiSync and FastFacts are registered trademarks of NEC Technologies, Inc. The Energy Star emblem does not represent EPA endorsement of any product or service. © 1994 NEC Technologies, Inc.

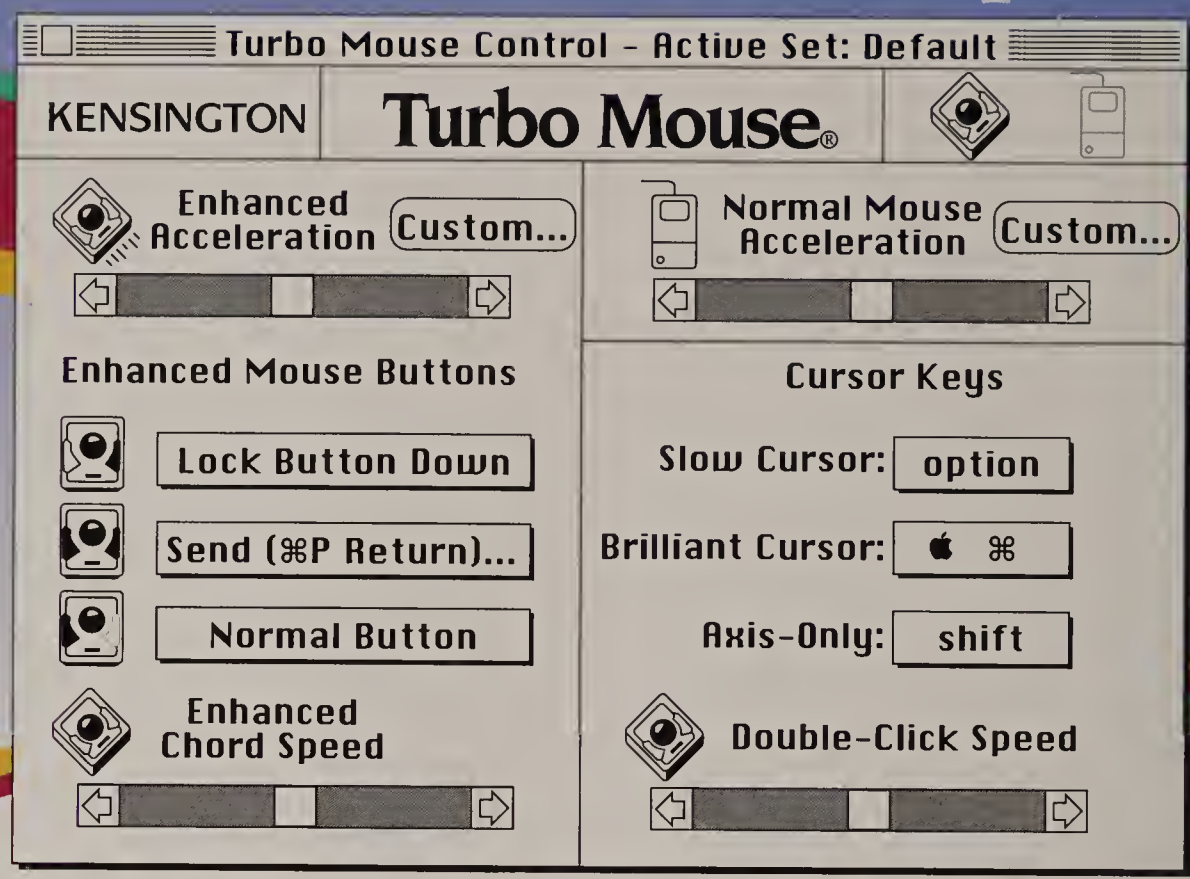
*See your local NEC dealer for details or call NEC FastFacts™ at 1-800-366-0476 and request document #24 for a copy of the rebate redemption form.

Ten hours per day.
One hundred and thirty words per minute.

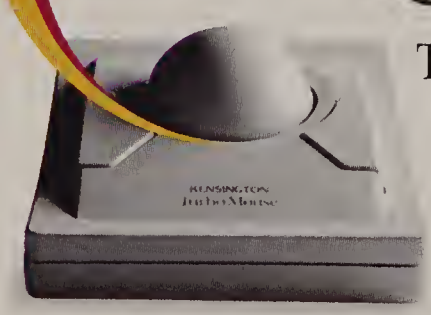
Fifteen hours today.
Sixty-five overnight packages. Tonight.



The first trackball in awards is first in something even more important.



Programmable Software.



The editors of *MacUser* think Turbo Mouse® is the best. They gave it the coveted Five Mice award. The readers of *Macworld* think Turbo Mouse is the best. This year they voted it "Best Input Device" for a record-setting *sixth* time. In fact, Turbo Mouse has won more awards than any Macintosh input device in history. And when you take a close look, it's easy to see why.

Programmable software means less clicking.

Other mice make you double-click to open a file. Turbo Mouse lets you do it with a single click.

Other mice make you hold down a button when dragging or drawing. Turbo Mouse lets you do it with a single click.

Other mice make you go through multiple steps to print a document or envelope. Again, Turbo Mouse lets you do it with a single click.

It's all possible with our advanced and unique programmable software. It will save you clicks, and that will save you time.

Programmable software means more cursor control.

Ever want to zoom your cursor across the screen? Or slow it down for small and detailed movements? Customized Acceleration lets you do it all with one convenient setting. And unlike other mice that limit the number of settings, Turbo Mouse gives you a virtually unlimited number of settings. So you can fine-tune the acceleration to exactly match the way you work.

The result is the smoothest and most controlled cursor movement you can find today.

Want the ultimate in control? Our Slow Cursor feature gives you pixel-by-pixel control for fine and detailed work. And our Brilliant Cursor® technology lets you instantly jump to pre-programmed HotSpots like the toolbar or a palette.

You can even program Turbo Mouse to send complex keyboard commands—like printing an envelope, inserting a picture, sending a fax. And you can do it all with just one click.

What's more, Turbo Mouse automatically remembers which application you're in. So you can create different command combinations for each of your favorite programs.

And don't forget what started it all.

With all the talk about software, it's easy to forget our award-winning hardware.

A large, comfortable ball rests on long-lasting stainless steel bearings for ultrasmooth movement. The buttons are easy to click and well positioned so your fingers don't have to reach or stretch. And two ADB ports let you conveniently chain other devices.

Turbo Mouse 4.0 comes with on-screen help and is fully System 7.0 compatible. What's more, you get the unique Kensington Satisfaction Guarantee that includes a 5 year warranty, toll-free technical support and a no-risk 60-day trial.

For information, call 800-535-4242. Outside the US and Canada 415-572-2700. For information by fax, call and enter 82 and request document #323.

KENSINGTON®

Brilliant Cursor, Turbo Mouse and Kensington are registered trademarks of Kensington Microware Limited. © 1994 Kensington Microware Limited 9/94